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Theoretical and applied provisions of the research of the state budget deficit in the countries of Central and Eastern Europe

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Abstract: *Within the article, a comprehensive study of the state budget deficit in the Central and Eastern Europe (CEE) countries is presented, the effectiveness of managing it is determined. Considerable attention is paid to the deepening of methodical aspects of the assessment of trends in the formation of revenues and expenditures of the identified budgets, the algorithm for defining the deficit of the budget is detailed and it is tested in practice. The obtained results provide an opportunity to establish that the size of the state's deficit depends in part on the economic development of the state and at the same time, its existence can have a positive effect on the growth rate of the national economy. In order to establish the peculiarities of such interaction, a comparative analysis between the deficit ratio of the state budgets and the level of GDP in the CEE countries is carried out. The study confirmed the thesis on the correlation between these indicators and it was also possible to determine in the long run (2007-2017) how these parameters changed. It is established that the accelerated pace of GDP growth with simultaneous growth of the state budget deficit is an indicator of its effective management, as economic growth allows for new, unplanned revenues and other incomings that will reduce the size of the gap between revenues and expenditures of such a budget. In turn, in case of rapid growth of the deficit against the backdrop of insignificant growth rates of the country's GDP, it shows that some of the country's financial resources are spent inefficiently and are not used to stimulate economic development in the state. In this case, the funds are spent on the social sphere maintenance, raising the level of economic provision of citizens of the state. However, such processes can take place only in the short term, since the deficit itself will need to be further covered by other revenue items of the budget. Taking into consideration the outlined, it is stated in the article, that improper management of the state budget deficit may have long-term negative consequences for the functioning of the entire national economy, and their solution cannot be implemented quickly.*

Keywords: *deficit, state budget, budget revenues, budget expenditures, budget deficit indicator, GDP.*

JEL: B72, H62, H68, H11

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Introduction

The sphere of public finance is an important element of the functioning of the financial system of any state and its state in the vast majority of countries determines a general tendency of their economic development. Issues of increasing the efficiency of this sphere operation are particularly relevant for the countries which are developing, trying to increase the efficiency of their own functioning, balance public and private sectors of the national economy, ensure the formation of long-term prerequisites for increasing financial stability of the state.

These countries include the CEE states, which, after the collapse of the Soviet system, were in difficult conditions of functioning. In order to cope with the crisis and further adapt to new economic realities, the outlined states were forced to reform the economic systems through the use of a set of methods, tools and levers of state influence. As a result, individual countries succeeded in ensuring sustainable economic development and stabilizing financial systems. Others failed to build a solid foundation for active development of the national economy and their financial systems are permanently confronted with crisis situations and remain vulnerable to external negative influences.

The sphere of public finances is directly related to the budget system, the development of which in turn depends on the ability of state authorities to develop a high-quality state budget and ensure timely its adoption and implementation. A significant role in this process is played by the effectiveness of budgetary management, the level of qualification of the relevant civil servants, which develop, approve and implement the main directions of the budget policy (Ciobanu et al., 2019).

One of the important elements of the process of drafting and implementing the state budget is to manage its deficit, which is inherent in the budgets of all developing countries and objectively has the ability to positively influence the economic development of the countries, and may be a consequence of the difficult economic conditions, which the state faces. It is ensuring efficient management of the state budget deficit that is one of the essential elements of the development of the whole system of the national economy.

As experience shows, not all countries today have been able to build effective systems for managing the state budget deficit. Some of them, with a constant high level of deficits, are constantly in search of new sources of revenue to balance income and expenditure, others, on the contrary, use a budget deficit to deliberately and reasonably use the funds to stimulate the development of the real sector of the economy, creating conditions for long-term economic growth and, consequently, increasing budget revenues.

Consequently, the knowledge of the current trends of the existence of the state budget deficit is an important part of the overall process of studying the peculiarities of using budgetary policy instruments to manage this phenomenon. To this end, an analysis of foreign experience in this area becomes relevant. Accordingly, the paper focuses on the study of the state of the budgets of the CEE states, determination of the size of their deficits and the peculiarities of their formation.

Consequently, the main purpose of the article is to deepen the theoretical analysis of the budget deficit in different CEE countries, and knowledge of its impact on the functioning of their financial systems.

Methods of research. A complex of general scientific and special research methods is used in the article. By deepening the conceptual apparatus, methods of analysis and synthesis, generalization and scientific abstraction are used. Using the toolkit of statistical methods, the budget deficit of the CEE countries is studied, the coefficient of deficits is determined and the influence of factors on its formation is estimated within the paper.

1. Literature review

The issues of studying the peculiarities of ensuring the effective formation and distribution of financial resources of the state has always been the focus of many scholars-economists. Straightforward, the results of studying the peculiarities of the processes of deficiency of the state budget and its management were reflected in a large number of scientific works in the field of analysis of the financial systems functioning of different states.

The urgency of studying the budget deficit is directly related to the difficult search for a scientific substantiation of its optimal level, in which the state creates the basis for the further development of its economy and, at the same time, is able to increase its own financial security. Such studies have already been carried out by a large number of scientists, however, there is no single consensual view on this issue today. The outlined necessitates the implementation of new research in this area. Let's consider individual approaches of scientists to consideration of the features of financial systems functioning of the states, specific features of the management of the state budget deficit and its interconnection with economic development.

For the first time, the issues of studying the role of the state in ensuring its effective economic development were thoroughly and systematically considered in the writings of A. Smith and D. Ricardo. In particular, provisions established in the works of A. Smith regarding the balance of the state budget, peculiarities of increasing the debt of the country remain relevant and to date (Smith A., 1866).

D. Ricardo in his work paid much attention to study the peculiarities of the public finance system functioning. The scholar investigated the relationship between the existence of a budget deficit, public debt and economic development of the country (Siekelova et al, 2017). As a result of the knowledge of the above processes, the Ricardo equivalence theorem was formulated, which later in the XX century was deepened by the American scientist R. Barro. D. Ricardo in his work "Essay on the System of Financing" (1820) examined the relationship between the propensity of households to consume and the future budget constraints of the government, which will be associated with an increase in government revenues in the current period by borrowing with the simultaneous provision of low taxes, which in the future will lead to an increase in the tax burden for the repayment of state debts (Ricardo D., 1955; Ciobanu & Androniceanu, 2018).

J. Keynes questioned the main ideas of the classical school and suggested increasing the role of the state in regulating the economy, including through the use of fiscal and financial instruments to enhance its development. Keynesianism considered compulsory budget balancing as an anachronism. The advocates of this theory argued that if the state refuses to borrow from the economy and adheres to the concept of "healthy finances", then in this case it is extremely difficult to stimulate economic development. In the future, following the provisions of this concept, governments began to actively use the market of loan capital to raise public incomes by issuing their own securities. At the same time, the position of full balancing of incomes and expenditures was changed to the concept of the assumption of the existence of the state deficit and its use as a tool for raising the level of economic development of the state (Keynes J.M., 1978). The theory of J.M. Keynes was once again positively verified and the imbalance in public finances (large budget deficits greatly increasing public debt) constituted a rescue for the financial sector as well as a tool for stimulating the demand (Owsiak S. 2013).

Budget deficit exists when, during a certain period, public expenditures become higher than the public income. According to Buskeviciute E. (2008), the budget deficit exists when income is lower than the expenditures. To widen the description of the budget deficit, Rakauskiene O. (2006) says that there are two types of budget deficits: active and passive. Active budget deficit can be recognised when public expenditures are above public income whereas passive budget deficit can be seen when taxes are not collected due to economic growth decrease, public debt is not honoured, taxes privileges. The more detailed budget deficit conception is prepared by Sineviciene ir Vasiliauskaite (2010): fiscal policy can be contra-cycled in developing countries; this fact is explained by non-discrete fiscal policy (self-contained economic stabiliser). This theory explains that having an increase of public income, collected taxes amounts grow together and public expenditures decrease – the public budget is surplus. On the other hand, when the economy is decreasing, public budget does not collect enough income to cover expenditures (social welfare) in this case budget is deficit.

Ciak J. notes that the need to ensure a budget balance between costs and expenditures is an important task for public authorities in order to ensure the country's financial security, its ability to counteract the financial destructive factors of different nature. The scientist observes that in practice full synchronization between incomes and expenditures is difficult to achieve, therefore an imbalance between them will take place in the form of a budget surplus or deficit (Ciak J., 1997; Mura et al., 2017).

The impact of various factors on the formation of the budget deficit was also studied by F. Jaseviciene and E. Rudzionyte (2015), who claim that the analysis of the budget deficit reveals that the main factors which might cause the budget deficit is ineffective fiscal policy, inefficient large-scale investment in the country's economic development unpredictable circumstances, such as wars, natural disasters, and economic crisis.

Among the Ukrainian scientists, the issue of the budget deficit existence and the peculiarities of its management were studied in the works of many scholars. Rekova N., Dolozina I., Nitsenko V., Zaitsev Yu & Zamlynskyi V. state that state revenues and public expenditures, which form two sides of the state budget, are stable and constant cash flows. However, the volumes of such flows may be different, which, accordingly, leads to different results for the financial system of the state (surplus, deficit). Ensuring the stability of the financial system, the formation of conditions for the growth of state budget revenues and the existence of a permissible value of its deficit can only be implemented if there is an effective system of budget management and requires the adoption of government decisions on the part of the government (Rekova N., Dolozina I., Nitsenko V., Zaitsev Yu. & Zamlynskyi V., 2018).

Savlyk M. pays great attention to the study of methods for its covering, analysis of the positive and negative aspects of their use. The author observes that "in conditions of budget imbalance, the government faces the problem of finding sources of financing for the state budget deficit. In world practice, three methods of financing a budget deficit are known: tax financing, debt financing, financing by emission of currency" (Savlyk M., 2011).

In addition to Savlyk M., other scholars also paid significant attention to the search for sources of state budget coverage. In particular, Pasichnyk Yu argues that "the budget deficit has two main ways of covering - from domestic sources and through external borrowing. Domestic sources may include loans from the National Bank and issuance of government securities. External - loans from governments of the countries sympathetic to this country, foreign banks and international financial organizations" (Pasichnyk Yu, 2003.). Lunina I. indicates: "to cover the budget deficit, different forms of public credit (both internal and external) may be used. The work of the printing press, which leads to emissions, not due to the needs of commodity circulation, should be regarded as an act that grossly violates the laws of monetary circulation, and therefore it is inadmissible" (Lunina I., 2014).

However, in spite of numerous scientific works of both domestic and foreign scientists, theoretical and applied research principles of the formation and current state of budget deficits in CEE countries remain insufficiently studied. To date, there are some fragmentary studies in this area. Nevertheless, scientific works, in which there would be complex, systematic study of them actually lacked.

2. Methodological provisions for the analysis of the level of the state budget deficit

The above theoretical aspects about the role of the state budget deficit in the development of the financial system of the country, its economic development only confirms the situation, that the availability of qualitative work of public authorities in the field of public finances is one of the basic conditions for effective management of incomes, expenditures, and, respectively, a deficit or surplus of the state budget. From a theoretical point of view, management of the budget deficit, in our opinion, should be considered as a set of methods, tools and leverage used in the process of adopting tactical financial decisions by public authorities to ensure budget balance. Effective management of the state budget deficit is part of the budget process and, together with other indicators, shows the quality of the fiscal policy implemented in the state (Hrubliak O., Karvatskiy M. & Zhavoronok A., 2018).

We will conduct an analysis of the state budget deficit in the CEE countries to determine the peculiarities of its management by the governments of these countries. This will reveal the most effective models for ensuring a balance between revenues and expenditures of the state budget with a view to their adaptation and subsequent use by those countries that have not yet been able to build their own effective, balanced and sustainable system of external threats.

Let's consider methodical principles of the analysis of the state budget deficit. The basic indicator for this is its absolute size, which is determined by calculating the difference between expenditures and budget revenues. In addition, in this case indicators of deficit (the ratio of expenditure to income) and the ratio of the volume of the state budget deficit to GDP of the country areas well important. When calculating the deficit of the state budget, attention is also paid to the peculiarities of the impact on its level of income and expenditure.

The change in the state budget deficit due to the growth of its expenditures is determined by the formula:

$$\Delta C_{\mathbf{def}s} = \frac{S_1 - S_0}{R_1}, \qquad (1)$$

where, S_1 –spending of the state budget of the reporting period;

S_0 –spending of the state budget of the base period;

R_1 – revenues of the state budget of the reporting period.

The change in the deficit of the state budget due to the growth of revenues should be determined by the formula:

$$\Delta C_{\mathbf{def}r} = \frac{S_0}{R_1} - \frac{S_0}{R_0}, \qquad (2)$$

where, R_0 –revenues of the state budget of the base period.

Thus, the formula for changing the deficit budget indicator will be as follows:

$$\Delta C_{def} = C_{def1} - C_{def0} = \Delta C_{\mathbf{def}s} + \Delta C_{\mathbf{def}r} \qquad (3)$$

where, – coefficient of the budget deficit of the reporting period;

– coefficient of the budget deficit of the base period;

$\Delta C_{\mathbf{def}s}$ – change in the volume of spending of the state budget;

$\Delta C_{\mathbf{def}r}$ – change in the volume of revenues of the state budget.

Using statistical data on the volume of revenues and expenditures of the state budget of some CEE countries (Appendix 1) and the above formula, we will analyze the state of deficit of their budgets in more detail.

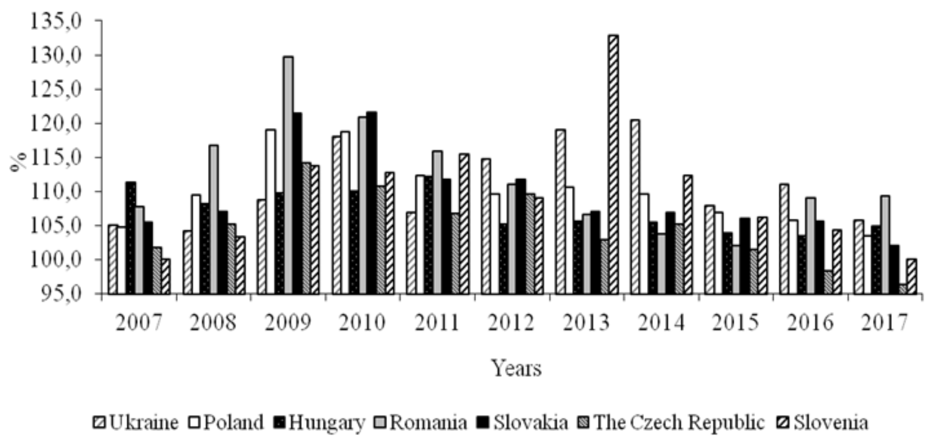
3. Investigation of the state budget deficit in selected countries of Central and Eastern Europe

Consequently, Figure 1 presents the results of a study on defining the deficit of state budgets of some CEE countries (Appendix 2).

In accordance with the economic content of the deficit indicator of the state budget, its value should be less than one and move to zero. The smaller the value of this coefficient is, the more balanced the revenues and expenditures of the budget are.

Data presented in Figure 1 make it possible to state the various trends of the deficit indicator change in the CEE countries. In particular, the information provided shows a close correlation between the volume of the state budget deficit and overall economic development in the country. In particular, the situation in 2008-2009 is quite typical for all states, when the impact of the financial and economic crisis led to an increase in the volume of external debt of countries, decrease in the rates of their economic growth. In fact, the data of Figure 1 demonstrate the level of sustainability of the economies of the CEE states and their ability to withstand external unpredictable destructive influences. It should be noted that the trend of the deficit indicator growth after 2008 changed during 2009-2010 on the trend of its gradual decrease. This was typical for the following countries: Ukraine, Poland, Romania, Slovakia, the Czech Republic.

Figure 1. Dynamics of the indicator of the state budget deficit of some CEE countries in 2007 – 2017, %



(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018))

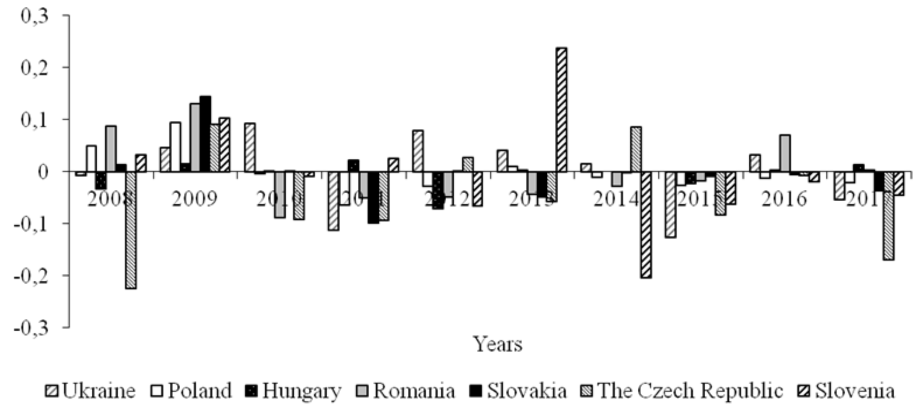
In fact, already during 2011-2017, there was a gradual further decline in the deficit figure in most CEE states with minor fluctuations in the short term. Exception is only the tendencies of this indicator in Ukraine and Slovakia. Especially its significant change differs from the averaged position in Ukraine, which is due to the political crisis of 2013-2014, annexation of the Crimea, the war in the East of the state. As a result of such internal destructive factors, there was a significant devaluation of the national currency and a decrease in the level of stability of the whole sphere functioning of public finances. Growth of debts to the IMF, issue of government securities to fulfill state internal and external obligations, stabilization of the economic situation and the need to ensure the implementation of social standards against the background of a significant decline in the standard of living of citizens led to an increase in budget deficit (Ohanyan & Androniceanu, 2017).

Starting from 2015, there is a gradual stabilization of both economic development in Ukraine and the growth of the stability of the financial system of the state. In particular, during the period from 2015 to 2017, the revenues of the State Budget of Ukraine increased by EUR 4.3 billion, and expenditures - by EUR 4.2 billion. This tendency has led to a decrease in the budget deficit over the past years by 2.1 percentage points. In 2015-2017, the deficit indicator varied within 10%. The decrease of the deficit figure in 2017 to 5.8% indicates the restoration of the stability of the financial system of the state and the gradual exit of the country from a deep economic crisis.

We will analyze the change in the deficit indicator of the state budgets of the CEE countries by changing the volumes of their expenditures and incomes, that is, we will determine what from the above parameters has the ability to accelerate the growth of the deficit of state budgets faster. Such an analysis allows us to clearly establish the main cause of the occurrence of this phenomenon in the country and determine whether its volume is connected with an increase, first of all, expenditures, or an insufficient rate of formation of budget revenues. The results of calculating the change in the deficit indicator due to changes in the volumes of expenditures and revenues of the state budget of the CEE countries are presented in Appendix 3. The actual values of this indicator show that the volume of expenditures of the corresponding budget exceeds the increase of incomes of this budget, and, accordingly, negative ones - on the contrary (Figure 2).

Significant fluctuations in the rate of the state budget deficit are observed in two countries: Ukraine and Slovenia. In 2010, there was the largest characteristic increase of the deficit indicator in Ukraine, which is due to the increase in the expenditures volume by 0.227, the dynamics for growth of the incomes volume by 0.134. That is, the growth of expenditures in the dynamics increased the deficit figure by 22.7 percentage points, the growth rate of income is lower (13.4 percentage points) and do not cover expenditure growth, which led to a significant increase in the deficit ratio. That is, the dynamics of income growth is negative and additionally increases (along with the dynamics of expenditures growth) the deficit ratio. Dynamics of the change in the deficit indicator of the state budget of Slovenia repeats the dynamics of the indicator itself. Significant change in the deficit of the state budget of Slovenia in 2013 was due to the increase in expenditures by 20.2 percentage points, and because of the dynamics of income decreased by 3.6 percentage points.

Figure 2. Dynamics of the change of the state budget indicator of the CEE countries in 2008 – 2017



(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018))

The trend for a change in the deficit indicator of other CEE countries is roughly the same trend, ranges from -0.1 to 0.1 and shows a stable policy of governments in the form of revenues from the state budget and financing of budget expenditures.

4. Assessing the consequences of the budget deficit in CEE countries

To analyze the efficiency of the state deficit management, you can determine the ratio of its size to the country's GDP. GDP characterizes the total value of the created value added in the production and non-productive sectors of the economy and is reflected in income and their use. Thus, the received parameter will allow to analyze in dynamics which of these indicators grows faster. By quality management of the size of the state budget deficit, the pace of its increase will be lower than the increase in GDP. In this case, the formation of a deficit by state authorities is part of the policy for stimulating economic development of the country and additional taxes and revenues received from the growth of the national economy will allow to cover the difference between expenditures and budget revenues in the future.

Accordingly, when the country's GDP grows slower than the country's deficit, in the long run, this may lead to a gradual increase in the difference between expenditures and budget revenues. Thus, extra money spent will not be invested in the real sector of the economy, will not be returned to the budget in the form of direct and indirect income, but are used to finance current expenditures. In this case, the efficiency of the use of such resources is low, and in the future, the issue of finding new sources of deficit reduction of the state is actualized.

Most economists believe that the implementation of deficit financing can be used to generate a short-term stimulus effect, either for a particular industry or for the entire economy. In this view, increases in expenditures and tax reductions can be used to generate employment opportunities and consumer spending and reduce the intensity of stagnant economic periods. Deficit financing is a less effective countercyclical strategy when it leads to “crowding out.” Crowding out occurs when government financing merely replaces private sector funding instead of inducing new economic activity, and is more likely to occur in periods of robust economic growth. Deficit reduction when the economy is operating near or at full potential can help prevent the economy from overheating and avoid “crowding out” of private investment, which could have positive implications for intergenerational equity and long-term growth (Grant A. Driessen, 2017).

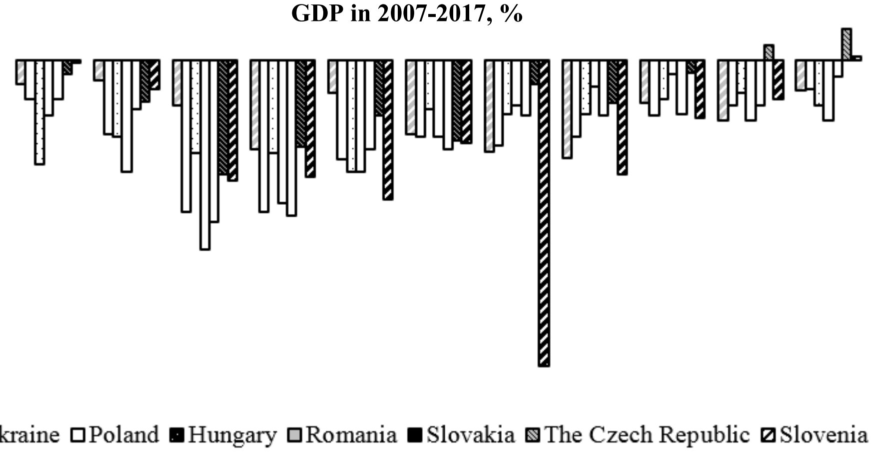
However, American economists Morsheda H., Raja N., Chang L. investigated the impact of the budget deficit on US GDP over the period 1930-2010 and concluded that not all the phases of the economic cycle had the same interaction of these indicators (Morsheda Hassan, Raja Nassar, Chang Liu, 2014). In fact, data show that since 2002 and especially after 2007, deficit spending grew significantly while the GDP was stagnant or showed weak growth. Based on this, they analyzed the data for the period 1930 to 2006 and for the period 1930-2001. In both cases, there was no significant relationship between deficit spending and the GDP. In addition, there was no significant cross correlation. This indicates that these years were the contributing factor for the negative relationship between deficit spending and growth. Moreover, P. Krugman argued that deficit spending did not help the economy in the recent recession because it was not enough to cause an increase in demand and economic growth (Krugman P., 2012).

The ratio analysis of the budget deficit to GDP makes it possible to understand the real situation with regard to the growth of the budget deficit, taking into consideration changes in real GDP. It is worth noting that for the EU and Ukraine, which seeks to join the European Union and is obliged to reform its own financial system, including the public finance sector, there is a requirement for the basic indicators of the budget system that must be met by the countries. Such parameters are clearly defined in the Maastricht Treaty, in particular:

1) state budget deficit - no more than 3% of GDP;
2) public debt - no more than 60% of GDP;
3) support for the course of the national currency in the medium term (3-5 years);
4) inflation should not exceed 1.5% of the average for EU countries;
5) long-term interest rates on government bonds should not exceed the 2% indicator of the countries with the lowest values.

Information concerning the ratio of the state budget deficit in CEE countries to their GDP is shown in Figure 3.

Figure 3. Dynamics of the ratio of the budget deficit in some CEE countries to their GDP in 2007-2017, %



(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018)

As can be seen in Figure 3, consequences of the financial crisis of 2007-2008 for CEE countries were negatively stable over a long period, and the level of stability of their financial systems has also declined. During 2009-2015, the ratio of deficit to GDP over its normative values in many states of this group exceeded its optimal value set at 3.0%. In some CEE countries, debt crises have been observed in 2008-2010, which have had a very negative impact on their economic development (Romania, Slovakia, Poland, Slovenia, Ukraine).

However, starting from 2015, the ratio of budget deficit to GDP in most CEE countries has already fallen to the normative value, which indicates the normalization of the financial system and the ability of these countries to accelerate their own economic development. In recent years, in the Czech Republic and Slovenia, the budget has been executed in general with a surplus.

Having carried out a thorough analysis of the state budget deficit of the CEE countries, one can conclude that those already included in the European Union were able to overcome the consequences of the 2008-2009 crisis in general, ensured the stable functioning of the entire sphere of public finances and also managed to create conditions for gradual economic development. However, implementing research on current trends in the level of deficits in the budgets of these countries, the question arises as to the possibility of comparing the results obtained between different states, taking into consideration their different potential for the development, various sizes of territories, number of population. To form a single database for comparing individual parameters that were determined during the implementation of this analysis, we will define the indicator of the volume of the state budget deficit in the calculation per 1 person and compare it with the ratio of GDP per 1 person.

Calculation of the state budget deficit by 1 person allows you to compare this data between individual countries and determine the deviation from the average across the CEE region. Results of conducting these calculations for the data of 2017 are presented in Fig.4. We'd like to note that, as in the Czech Republic in 2017, the budget was executed with a surplus, then this data was excluded from the calculations.

Consequently, Figure 4 shows that two countries have the largest state budget deficit, Hungary has 267.86 EUR per capita and Romania – 252.34 EUR per capita. The average of this parameter for all countries is 144.17 EUR. Thus, the given indicator in these countries is overestimated and does not correspond to the general tendency for the states of the given region. It should also be noted that in 2017 in Romania, the ratio of the state budget deficit to GDP was 3.26 units, which does not meet the requirements of the Maastricht Treaty. In Ukraine and Slovenia, on the other hand, the lowest deficits of the budget per 1 person are observed. However, if in Slovenia GDP per 1 person is EUR 20.49 thousand, which testifies to the high level of stability of the financial system of this state to external influences and about the potential for increasing the state's deficit for the development of the national economy, then in Ukraine GDP in calculation per 1 person is only EUR 2.38 thousand.

Figure 4. Information on the volume of GDP per 1 person and the amount of budget deficit per 1 person in 2017 in the CEE countries

(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018)

Thus, the low level of economic development of the country does not allow to raise the level of deficit of its state budget. At first glance it can be argued that Ukraine has the potential to increase its volume in order to use additional financial resources for economic development. However, on the other hand, it should be borne in mind that the total debt of Ukraine at the end of 2018 amounted to EUR 68.38 billion, of which external debt – EUR 44.06 billion. Accordingly, calculated per 1 person – 957,96 EUR, which is a very high indicator, given that the average wage in the country at the end of the period was EUR 333.38. Also, the ratio of external debt to the country's GDP by the end of 2017 was 46.0%, which is a high indicator.

Consequently, the results obtained suggest that in countries where economic development is fast and stable, the ratio of the deficit level per 1 person is significant and higher than its average for all states (except for Slovakia). This indicates that these countries consciously formulate such a policy, since they are confident that they will be able to cover the gap between revenues and expenditures due to the growth of the national economy. Instead, the states in which the ratio of the deficit level per 1 person is insignificant and very different from the average, at first glance, have a colossal potential for increasing the budget deficit and sending additional financial resources to the development of the economy. However, the low GDP of these countries will not allow future balances in revenues and expenditures due to new economic development. Thus, we can conclude that one of the conditions for effective management of the state budget deficit is the consistent compliance with the agreed growth of its volumes with the growth of the country's GDP. Finding this optimal value is one of the key tasks for public authorities that manage the public finance sector and make appropriate decisions.

5. Conclusions

Consequently, the state budget deficit of the CEE countries is analyzed within the article. In particular, the expediency of defining the deficit indicator of this budget as one of the key indicators for assessing the effectiveness of the budget system is substantiated. In addition, a methodology for its determination is proposed.

Using an array of statistical information and methodical principles for conducting analysis of the state budget deficit, a study on revenues, expenditures of the CEE countries' budgets, and their deficits was conducted.

The results obtained note about the significant impact of the financial and economic crisis on the functioning of the entire system of public finances in these countries in 2008-2009. Within the acrticle, changes in the GDP of the CEE states in 2007-2017 are analyzed in detail, the ratio of the deficit of their budgets to GDP is calculated. The obtained results confirmed the objectively existing relationship between the above indicators. Accordingly, gradual restoration of economic development in the CEE countries in 2010-2017 also contributed to reducing their deficits and allowed gradually to reach the normative ratio of the deficit to GDP under the Maastricht Treaty in the amount of 3.0%.

Definition of the deficit index of the state budgets of the CEE countries also allows us to draw conclusions about the management effectiveness of the state budget deficit in these countries. In particular, it has been established that the quality of such management can be partially determined on the basis of comparison of the indicators of GDP growth of the country and their level of the state budget deficit. If GDP grows faster, this means that additional funds from the state budget were sent to effectively operating sectors of the national economy and this allowed to receive additional long-term revenues. Instead, the growth of the state budget deficit faster than the GDP growth rate suggests that part of the money was directed to the economy, the functioning of which did not allow for additional long-term revenue, and the funds were spent inefficiently from the point of view of building the economy of the country.

Objectively, the question arises as to how to improve the efficiency of managing the state budget deficit in order to ensure long-term economic development of the country and not to spend money unproductively. It is extremely difficult to give the answer to this question, as each country has its own peculiarities of the budget system functioning, the consideration of which is an integral part of the implementation of the whole budget policy. However, it is quite clear that the funds of the state budget deficit should be spent on those measures, which allow to return them in the form of taxes, non-tax receipts, shares or other securities, other assets. If under a deficit budget the economy does not grow properly, then there is a question of covering its size, which requires the withdrawal of funds from other budget items. Thus, the availability of the state budget not only with its inefficient management does not allow to develop the economy of the state, but, on the contrary, negatively affects the current state of the economy of the country. How to ensure the transformation of the passive deficit into an active one is already the task of public authorities of each country.

From a scientific point of view, issues of developing a model for gradually balancing the size of the state deficit and its GDP, definition of the directions of expenditure of budget funds, which allow to receive revenues in the short, medium and long-term perspective and thereby determine the process of reducing the deficit by stimulating the economic development of the state also in different time periods remain interesting.

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Appendix 1. Dynamics of revenues and expenditures some CEE countries for 2007-2017

EU billion

Years	Ukraine			Poland			Hungary			Romania			Slovakia			The Czech Republic			Slovenia		
	Budget revenues	Budget revenues	GDP	Budget revenues	Budget expenditures	GDP	Budget revenues	Budget expenditures	GDP	Budget revenues	Budget expenditures	GDP	Budget revenues	Budget expenditures	GDP	Budget revenues	Budget revenues	GDP	Budget revenues	Budget expenditures	GDP
2007	24,0	25,3	104,4	124,2	130,0	130,0	45,7	50,9	50,9	34,5	48,2	48,2	19,9	21,0	21,0	51,0	51,9	51,9	13,9	13,9	13,9
2008	30,1	31,4	123,1	138,6	151,8	151,8	48,6	52,6	52,6	32,4	54,6	54,6	23,0	24,6	24,6	61,9	65,1	65,1	15,2	15,7	15,7
2009	20,7	22,5	83,8	121,3	144,3	144,3	43,9	48,2	48,2	30,6	49,3	49,3	23,3	28,3	28,3	57,0	65,1	65,1	15,4	17,5	17,5
2010	24,5	28,9	103,1	142,5	169,1	169,1	43,8	48,2	48,2	33	50,3	50,3	23,6	28,7	28,7	61,8	68,4	68,4	15,6	17,6	17,6
2011	28,1	30,0	118,6	149,9	168,3	168,3	48,2	54,1	54,1	33,9	52,4	52,4	25,5	28,5	28,5	67,2	71,7	71,7	15,5	17,9	17,9
2012	3,3	3,8	136,8	150,9	165,4	165,4	46,1	48,5	48,5	33,6	49,4	49,4	27,0	30,2	30,2	65,4	71,7	71,7	16,7	18,2	18,2
2013	32,0	38,1	137,3	152,1	168,3	168,3	46,7	49,3	49,3	33,3	50,0	50,0	28,7	30,7	30,7	69,0	71,0	71,0	16,2	21,5	21,5
2014	22,7	27,4	99,8	157,9	173,0	173,0	50,5	53,3	53,3	34,2	51,9	51,9	30,6	32,7	32,7	63,3	66,6	66,6	17,0	19,1	19,1
2015	22,1	23,8	81,8	167,6	179,2	179,2	52,3	54,0	54,0	35,5	56,9	56,9	32,7	34,7	34,7	68,5	69,5	69,5	17,6	18,7	18,7
2016	21,8	24,2	84,2	168,0	177,5	177,5	53,6	55,5	55,5	31,9	60,0	60,0	32,1	33,9	33,9	68,9	67,7	67,7	16,0	16,7	16,7
2017	26,4	28,0	99,4	187,2	193,8	193,8	54,9	57,6	57,6	30,7	62,6	62,6	34,5	35,2	35,2	81,0	78,0	78,0	16,0	16,0	16,0

(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018))

Appendix 2. Dynamics of the budget deficit index of some CEE countries for 2007-2017

Years	Ukraine		Poland		Hungary		Romania		Slovakia		The Czech Republic		Slovenia	
	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %	Budget deficit, EUR billion	Budget deficit index, %
2007	-1,2	105,1	-5,8	104,7	-5,1	111,4	-3,5	107,8	-1,1	105,5	-0,9	101,8	-0,002	100,0
2008	-1,3	104,2	-13,2	109,5	-4	108,2	-7,8	116,7	-1,6	107,0	-3,2	105,2	-0,5	103,3
2009	-1,8	108,8	-23	119,0	-4,3	109,8	-11,3	129,7	-5	121,5	-8,1	114,2	-2,1	113,7
2010	-4,4	118,1	-26,6	118,7	-4,4	110,0	-8,7	120,9	-5,1	121,6	-6,6	110,7	-2	112,8
2011	-1,9	106,9	-18,4	112,3	-5,9	112,2	-7,2	115,9	-3	111,8	-4,5	106,7	-2,4	115,5
2012	-0,5	114,8	-14,5	109,6	-2,4	105,2	-4,9	111,0	-3,2	111,8	-6,3	109,6	-1,5	109,0
2013	-6,1	119,0	-16,2	110,6	-2,6	105,6	-3,1	106,6	-2	107,0	-2	102,9	-5,3	132,8
2014	-4,7	120,5	-15,1	109,6	-2,8	105,5	-1,9	103,8	-2,1	106,9	-3,3	105,2	-2,1	112,4
2015	-1,7	107,9	-11,6	106,9	-2,1	103,9	-1,1	102,0	-2	106,1	-1	101,5	-1,1	106,2
2016	-2,4	111,1	-9,5	105,7	-1,9	103,5	-5	109,1	-1,8	105,6	1,2	98,3	-0,7	104,4
2017	-1,5	105,8	-6,6	103,5	-2,7	104,9	-5,4	109,4	-0,7	102,0	3	96,3	0,02	100,1

(*Source:* Own study based on: The official sites of Ministry of Finance of Ukraine (2018), The official site of Eurostat (2018))

Appendix 3. Factor analysis of the index of the state budget deficit of some CEE countries for 2008-2017

Years	Ukraine			Poland			Hungary			Romania			Slovakia			The Czech Republic			Slovenia		
	Change of the deficit index	- through expenditures	- through revenues	Change of the deficit index	- through expenditures	- through revenues	Change of the deficit index	- through expenditures	- through revenues	Change of the deficit index	- через витрати	- through revenues	Change of the deficit index	- through expenditures	- through revenues	Change of the deficit index	- through expenditures	- through revenues	Change of the deficit index	- through expenditures	- through revenues
2008	-0,008	0,203	-0,211	0,049	0,157	-0,108	-0,032	0,036	-0,068	0,088	0,136	-0,048	0,014	0,156	-0,142	-0,224	0,213	-0,437	0,033	0,118	-0,085
2009	0,046	-0,428	0,474	0,094	-0,062	0,156	0,016	-0,102	0,118	0,131	-0,140	0,270	0,145	0,158	-0,012	0,091	0,000	0,091	0,104	0,116	-0,012
2010	0,093	0,262	-0,169	-0,003	0,174	-0,177	0,002	0,001	0,001	-0,088	0,024	-0,113	0,001	0,018	-0,017	-0,092	0,053	-0,145	-0,008	0,008	-0,016
2011	-0,112	0,040	-0,152	-0,064	-0,005	-0,059	0,022	0,122	-0,100	-0,050	0,046	-0,096	-0,098	-0,009	-0,089	-0,093	0,049	-0,143	0,026	0,022	0,004
2012	0,079	0,250	-0,171	-0,027	-0,019	-0,007	-0,070	-0,121	0,051	-0,049	-0,067	0,018	0,001	0,065	-0,064	0,028	0,001	0,028	-0,065	0,017	-0,081
2013	0,042	-0,011	0,053	0,010	0,019	-0,009	0,004	0,017	-0,014	-0,044	0,013	-0,057	-0,049	0,016	-0,064	-0,056	-0,010	-0,046	0,238	0,202	0,036
2014	0,015	-0,469	0,484	-0,011	0,030	-0,041	0,000	0,079	-0,080	-0,028	0,037	-0,065	-0,001	0,065	-0,066	0,086	-0,069	0,156	-0,204	-0,142	-0,063
2015	-0,126	-0,161	0,035	-0,026	0,037	-0,063	-0,023	0,013	-0,036	-0,018	0,090	-0,108	-0,008	0,062	-0,069	-0,083	0,042	-0,125	-0,062	-0,018	-0,044
2016	0,032	0,017	0,016	-0,013	-0,010	-0,003	0,003	0,027	-0,024	0,071	0,057	0,015	-0,005	-0,026	0,020	-0,006	-0,026	0,020	-0,019	-0,128	0,110
2017	-0,053	0,143	-0,196	-0,021	0,087	-0,108	0,014	0,038	-0,025	0,004	0,045	-0,041	-0,036	0,038	-0,074	-0,169	0,127	-0,296	-0,045	-0,045	0,000

(*Source:* Own elaboration)