

## CRITERIA FOR OPTIMIZING THE STRUCTURE OF BUDGET EXPENDITURES IN UKRAINE

Nataliia Savchuk, Department of International Finance, Vadym Hetman Kyiv National Economic University, Kyiv, Ukraine  
[dx.doi.org/10.18374/JIFE-18-1.2](https://doi.org/10.18374/JIFE-18-1.2)

## ABSTRACT

*The article shows that the current state of development of Ukraine after choosing the path to market transformation is characterized by deep institutional transformations, which often lead to the emergence of social conflicts. Quite often the main reason of such conflicts is ineffective redistribution of public wealth, which causes dissatisfaction with society. The most risky area in this context is the budget and budget system. The article shows that a considerable part of the produced national product is accumulated in the budget. The redistribution of accumulated funds between the regions of the country is carried out through the system of intergovernmental relations, and then between the final recipients of budget funds. All these processes characterize the state's vision of defining and implementing budget priorities. The diagrams of volumes, changes, growth rates of the expenditures of the state budget of Ukraine, as well as their structure according to the functional classification for 2015-2016 are presented. It is suggested that the development of optimal approaches to budget priorities formation is an urgent problem for the Ukrainian society, with one of these priorities in the budgetary sphere being the optimization of the structure of budget expenditures.*

**Keywords:** budget, budget priorities, budget system, budget policy, budget expenditures, globalization.

## 1. INTRODUCTION

The system of formation of budget expenditures, their volumes and structure has a clearly defined subject of regulation - an optimal redistribution of mobilized funds to ensure the implementation of state functions, which is one of the indicators of budget priorities. That is why the structure of expenditures is conditioned by the specifics of the historical development of the country, the peculiarity of the course of social and economic processes that cause the domination of certain functions of the state in comparison with all others. The structure of budget expenditures determines the effectiveness of the state's influence on economic development, and is an indicator of the priority of the state functions. Priorities of fiscal policy are actually manifested in the direction of public expenditures [1, p. 75]. That is why it is impossible to develop universal recommendations on the optimal cost structure for all countries; such recommendations are unique for each country and change with time and along with the changing macroeconomic environment.

Different types of budget principles are described in the literature. These principles are aimed at improving the processes of budgeting, simplifying their implementation, making them clearer and more efficient, ensuring income redistribution, welfare, economic development and stabilization. The article [2] examines the dynamics of the share of income received in the form of taxes in the process of forming part of the budget of state revenues of Ukraine during 2000-2013. The emphasis is on the structure of direct and indirect taxes to the budget of incomes and the question of their optimal correlation. The amendments to the Tax Code are being analyzed in order to optimize the tax policy in the country and the tax rate, as well as deficiencies that still exist in the national tax system.



The authors of the papers [3, 4] emphasize that expansion of trade and investment, small business development, innovation support, export expansion and creation of a remote freelance of work will foster the competition of American business in the global economy.

In order to analyze the principles of budget formation and their implementation in practice and in accordance with legal and economic aspects three objectives were set in works [5,6]: to assess the principles of budget formation and their features; to evaluate implementation of the state budget principles in Lithuania, using legal documents and other sources; and analyze the balance of the state budget of the country. The analysis showed that in 2004-2014 Lithuania had a budget deficit. Budget revenues and government expenditures tended to increase unevenly. On average, profits slightly exceeded costs, but still made less than the budget balance than spending, and the ratio of government deficit to GDP exceeded 3 percent.

Authors in [7] emphasize that modernization of tax systems is necessary to alleviate structural deficits. Part of the problem is the institutional short-sightedness: improving the multi-year budget can alert politicians when the proposed actions are likely to create budgetary problems in the long run.

For example, in the United States, a budget that joins the regular budget, but involves different allocations, with regulatory costs may be "budgeted" separately, and businesses may have their own decisions and control procedures. Then the budget is a component of a larger process and will work as a management control tool [8].

Table 1 shows the dynamics of revenues to the Consolidated Budget of Ukraine in 2013-2017, with a forecast for 2018. Starting from 2014, revenues to the budget from the temporarily occupied territory of the Autonomous Republic of Crimea and the city of Sevastopol are not taken into account.

**Table 1**

**Dynamics of revenues to the Consolidated Budget of Ukraine in 2013-2018**

	2013	2014*	2015*	2016*	2017*	2018* forecast	DeviaTION of the 2018 forecast from the approved in 2017	
							+/-	%
Consolidated budget, total, including:	442,8	460,7	652,0	782,9	974	1118,8	144,8	114,9
General fund	375,0	387,2	602,7	718,3	880,7	1030,0	149,3	116,9
Special fund	67,8	73,5	49,3	64,6	93,7	88,8	-4,5	95,1

\* Excluding the temporarily occupied territory of Crimea and Sevastopol and T-bills (UAH 6.9 bn in 2014)

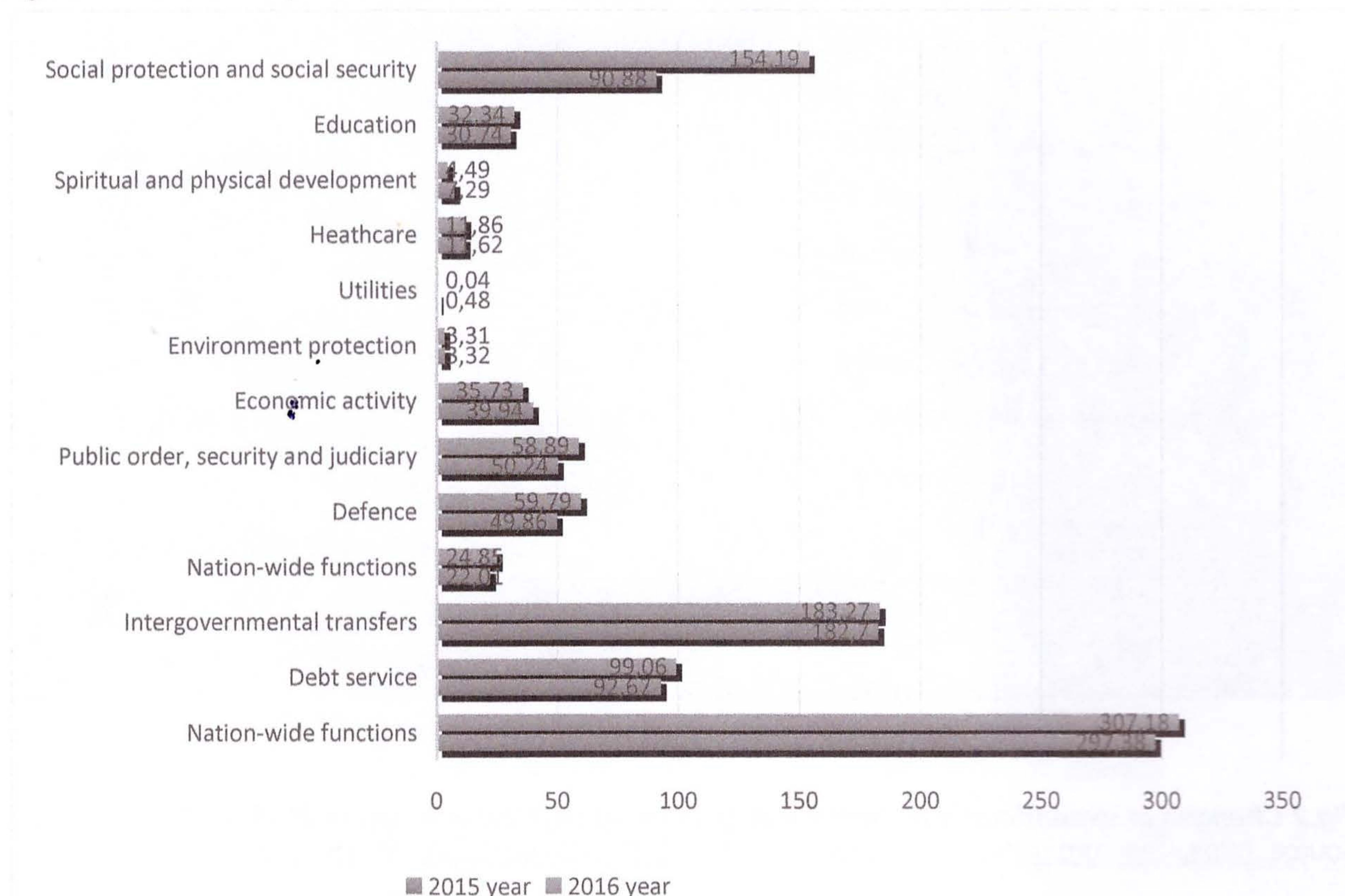
Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

It should be noted that the direction of optimizing the structure of expenditures in a democratic society depends also on the position of the society, which, choosing the appropriate political force, automatically agrees on its spending policy.

It is known that the main items of the DBU expenditures are: general government expenditures, debt servicing, intergovernmental transfers, defense, public order, security and judiciary, economic activity, environmental protection, housing and communal services, health, spiritual and physical development, education and social protection and social security.



Figure 1 shows the expenditure structure of Ukraine for 2015-2016.



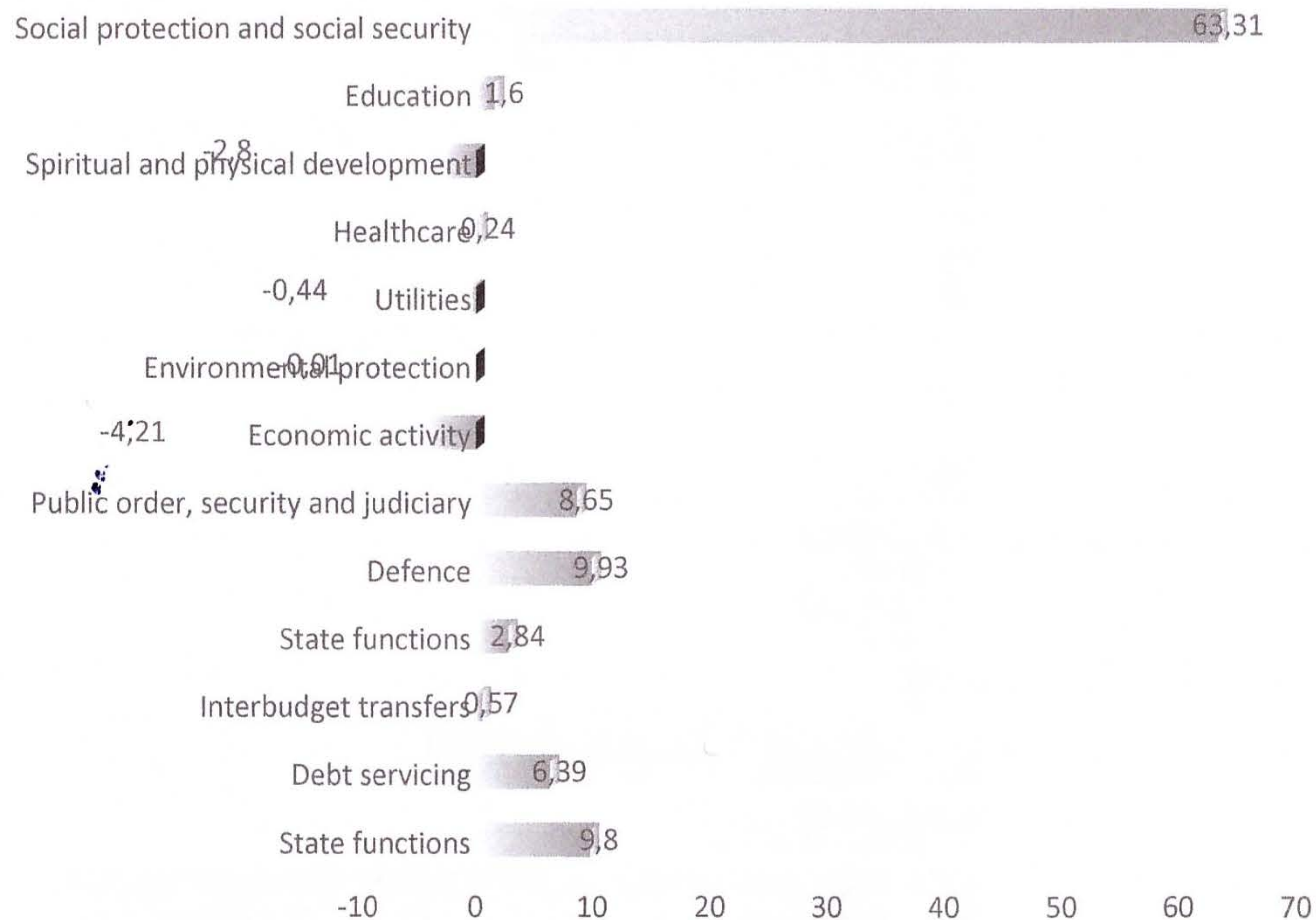
**Fig.1 Volumes of expenditures by functional classification for 2015-2016**

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

As Figure 1 shows, increasing spending on social protection and social security is due to government policies to strengthen citizens' protection from rising prices and inflation. In this connection, an increase in the minimum wage and the minimum subsistence level has been set. Military events in the eastern part of the country require further modernization of the armed forces, the purchase of military weapons and equipment, which necessitates an increase in defense spending, public order and security. For example, an increase in the funding of judicial activity is due to the reform of this branch of government, which involves recruiting, retraining and creating decent working conditions.

Figure 2 shows the Chart of Changes in the Expenditures of the Budget of Ukraine by Functional Classification (UAH billions) in 2015-2016.





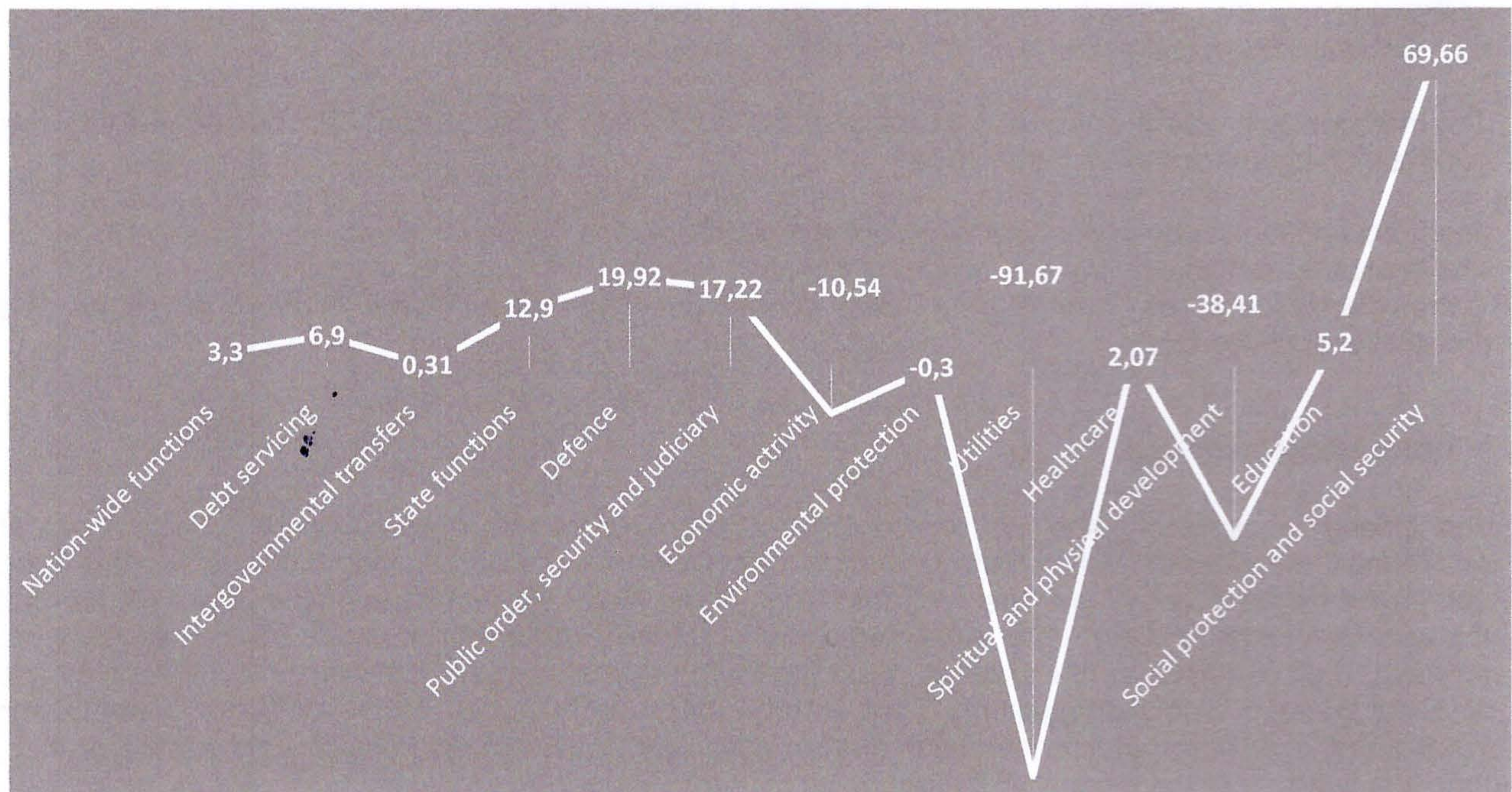
**Fig.2 Changes in expenditures by functional classification (UAH billions) in 2015-2016**

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

It should be noted that in 2016 the expenditures on housing and communal services (-91,67%), spiritual and physical development (-38,41%), and economic activity (-10,54%) decreased significantly. These trends in the expenditure items are due to the policy of decentralization of power in the country, according to which the redistribution of tax revenues in the direction of their increase to local self-government bodies and the association of territorial communities continues. Along with this, there is a delegation of a number of obligations, in particular the issues of spiritual and physical development, the maintenance and development of housing and communal services and economic activity to a large extent transferred to the local level. Accordingly, the expenditures of these articles are carried out at the expense of local budgets.

It is known that the structure of budget expenditures is determined in accordance with the interests of the ruling political force and if these interests are in line with the tasks of the socio-economic development of the state, then most of the criteria for optimality will be achieved. Therefore, one of the key conditions for optimizing budget expenditures is to reconcile the interests of society and the basic principles of the socio-economic policy of the state. Figure 3 shows the change in the rate of growth of expenditures by functional classification. The stimulation of economic development should become one of the key priorities for Ukraine, as the increase of economic growth may reduce the need to finance expenditures on provision of public services, and the quality of public services can significantly increase. Thus, according to the criterion of the growth rate of budget expenditures on the implementation of state functions and the physical volume of GDP, the structure of budget expenditures in Ukraine can not be considered the optimal one.





**Fig. 3 Rate of growth of expenditures by functional classification (in %)**

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

Social orientation of the state budget of Ukraine due to the increase of social expenditures should contribute to increasing the incomes of citizens, which respectively stimulates domestic consumption, and accordingly, economic development.

Note that from the point of view of optimizing the structure of budget expenditures, there are two questions: first, which expenditure structure is optimal, that is, the achievement of which criteria will be considered as bringing the structure of expenditures to an optimal state; second, what is the purpose of optimization (target function), that is, in order to achieve the result, it is necessary to optimize the structure of budget expenditures. In addition, the achievement of an optimal state involves the absence of negative consequences for most participants in the process of optimization.

In our opinion, the optimization of the structure of budget expenditures is the search for the best option for the correlation between different types of expenditures, but taking into account not only expenditure parameters, but also the consequences of changes in their structure for the implementation of state functions and processes of socio-economic development.

## 2. METODOLOGY

Modern globalization processes challenges demand the budget system institutions to create the budget policy adequate instruments able to effectively correct the macroeconomic policy in respect to the situation. Given the above the political approaches and budget technologies that ensure more effective reaching the state budget policy strategic goal subject to lower costs for increasing the welfare are necessary. This is one of the budget priorities that is, among others, continuously connected with the social choice theory. Proceeding from the main concept of the social choice theory the essence of which is the discovery of correlation between the political and economic events using the economic instruments



while studying the political processes, the social choice theory enables to explain the way of harmonization the social interest with the interest of the society members.

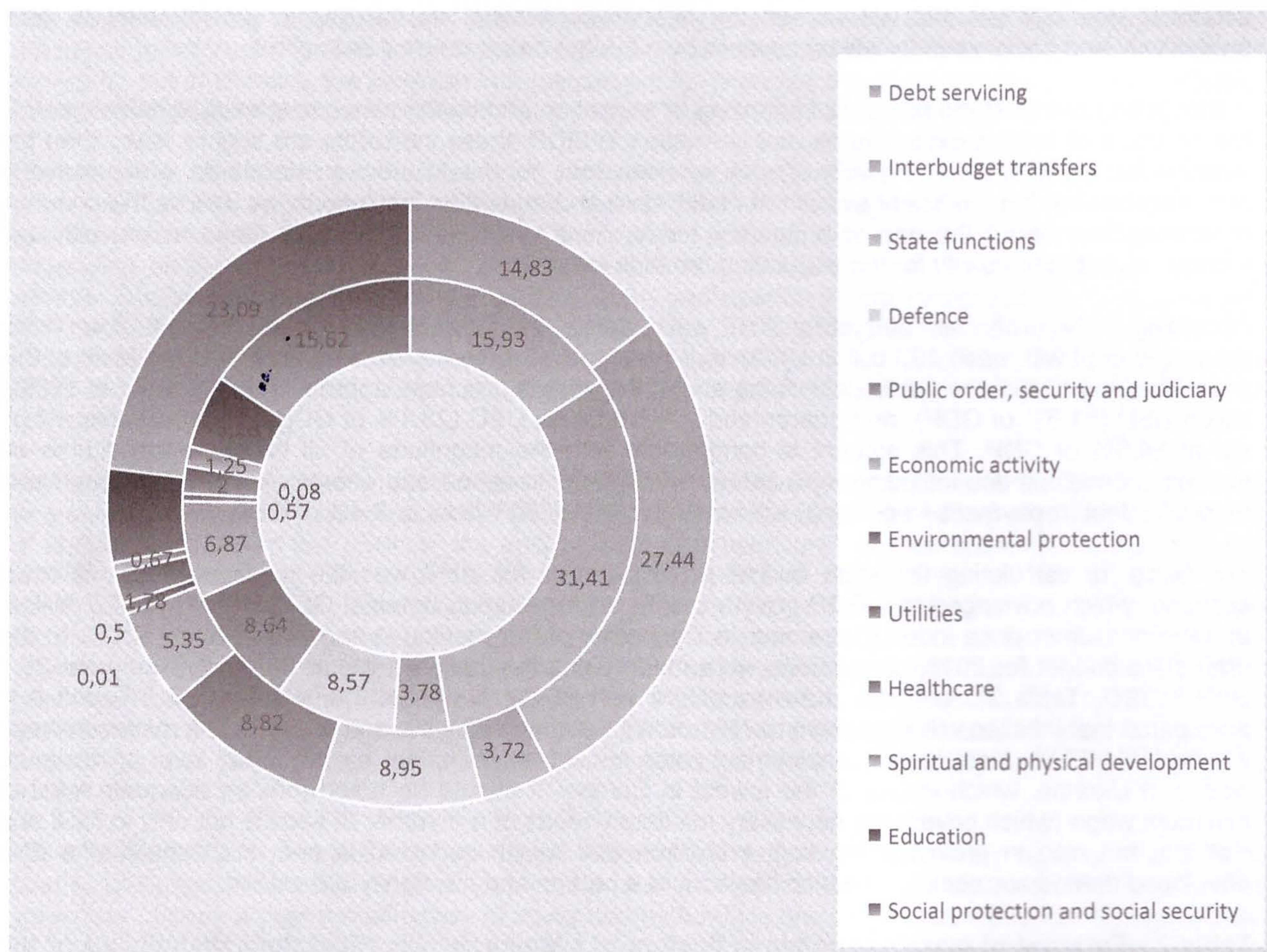
The methodological basis of social choice theory being the basis of the budget priorities and budget costs optimization criteria comprise the following:

- methods and means by which people are using the state bodies for their interests;
- the economic human concept that supposes people's rational behavior;
- the election process, namely, the work of deputies, bureaucrats and political regulation and constitutional economics.

### 3. RESEARCH FINDING

The criteria for optimizing the structure of budget expenditures are inseparable from the process of optimizing the implementation of state functions. In our opinion, the most complex is the justification of the optimization criteria for the management function. In this case, it can not be unequivocally asserted that the volume of expenditures for the implementation of this group of functions should be the largest or the smallest. It all depends on the stage at which the state is developing, which reforms it implements and what its purpose is in management. If the state declares a decrease in the number of bureaucratic procedures, a reduction in interference in business, an optimization of the management apparatus, etc., then it is logical that the amount of budget expenditures to ensure the implementation of this function will not increase, or growth will be comparable to the rate of GDP growth, but in the general structure they will take the smallest share of the expenditures. At the same time, reducing the level of spending on management will make it possible to channel funds into areas that require investments for effective economic development in order to prepare the ground for ensuring a high level of social protection and provision of the population. (Fig.4). Therefore, the assessment of the optimality of the structure of budget expenditures is a low informative of general tendencies (reduction or increase) and the need for a comparative analysis with indicators that directly or indirectly characterize the impact of budget expenditures.





**Fig. 4 Expenditure structure by functional classification in 2015 (internal ring) and in 2016 (external ring)**

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

Expenditures for social protection and social security, health care and education are predominant in the structure of budget expenditures; the share of these expenditures has a prevailing tendency to increase. A fairly large share in the structure of budget expenditures is expenditures on economic activity, the share of which does not radically change. The reduction in the share of expenditures for state functions can be estimated positively. At first glance, the structure of budget expenditures corresponds to the goals declared by the government for socio-economic development, but not only the redistribution of funds between budget items but also the effectiveness of their use is important. As the realities of Ukraine show, the level of social security of citizens does not correspond to European standards, which manifests itself, first of all, in the low level of state pension provision.

One of the problems is that in Ukraine not only unclear social standards are established, but there are no substantiated mechanisms for their revision, which often makes them objects of political speculation. We emphasize that such a dynamics of the structure of expenditures on the implementation of the social function is due to the low level of social development of the state, as well as the efforts of the government to adhere to the declared directions of social policy. The danger to the economy is also a situation where social spending is rising faster than productivity and GDP. There is a violation of the basic foundations of



economic development that will worsen the economic situation, as the gap in growth rates of labor productivity and social security will be covered by a budget deficit (explicit or implicit).

It should be noted that the amount of financing of education and health care occupies a significant part in the structure of budget expenditures, but in relation to GDP, these indicators are slightly lower than the average European ones. The quality of such services does not meet European standards, which is due to two main factors: the inefficient system of health care and education institutions, as well as the common misconceptions about the use of budgetary funds. As a result, the funding of these areas, although increasing, but their quality for the population remains rather low.

According to the draft state budget for 2018, submitted to the Cabinet of Ministers, the cost of servicing the public debt will reach 130 billion USD, an increase of 16 billion UAH compared with the level of this year. The limit size of the public debt at the end of the year is proposed approve in the amount of 1999.3 billion USD (61.5% of GDP), and guaranteed - 747.6 billion USD (23.1% of GDP). Together, this will be set at 84.6% of GDP. This amount is comparable with the magnitude of all budget expenditures on economic development, including agro-industrial complex, transport and energy. And the total payments on public debt (repayment + servicing) will amount to UAH 306 billion, or 9.4% of GDP.

The basis for calculating the state budget project figures for 2018 was the macroeconomic forecast scenario, which envisaged real GDP growth of 3%, an increase in nominal GDP to UAH 3247.7 billion, and the consumer price index (December to December of the previous year) at a level of 107%. In the draft state budget for 2018, calculations were made using the forecast rate at the end of the year 30.1 UAH / USD (Table 2). In 2018, the expenditure part of the budget will amount to 1.2 trn. and it is anticipated that inflation will slow down to 7% from 11% expected by the end of 2017. The minimum wage will be UAH 3723. Also, higher employment rates should not be offset by the lower level of minimum wages in Ukraine, which is one of the lowest in Europe. It should be noted that an adequate level of minimum wage (which covers the necessary minimum needs of a member of society not only in food and clothing, but also in providing housing, education and health services) is one of the hallmarks of a developed democratic society, in which the work of a person and his dignity are valued.

**Table 2 - Forecast of macroeconomic indicators of Ukraine, which affect the expenditures of the state budget of Ukraine**

	2017	2018	2019	2020
Nominal Gross Domestic Product, billions of hryvnias	2845,8	3247,7	3611	3981,3
Gross Domestic Product, in percentage to the previous year	101,8	103	103,6	104
Consumer price index in December to December of previous year, %	111,2	107	105,9	105
Industrial producer price index in December to December of the previous year, %	116,8	109	107,2	106
Export of goods and services, million dollars	50735	54419	57718	62427
Import of goods and services, million dollars	57222	61806	65649	70104
The exchange rate of hryvnia to the US dollar on average over the period UAH / USD	27,8	29,3	30,5	31

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)



The trend, when the largest share in GDP is taken by expenditures aimed at ensuring the realization of the social function of the state - health care, education, social protection and social security - prevails in the world, but in Ukraine, the increase in expenditures for financing the social sphere negatively affected the dynamics expenditures on economic activity - their share in GDP in recent years is decreasing.

Consequently, the development of criteria for cost optimization affects the implementation of the economic function also depends on many factors. First of all, the degree of state intervention in the economy, participation in the financing of investment projects, the need for regulatory measures, depending on the phase of the economic cycle, etc. Using various forms of support of the economic sectors (budget financing, preferential lending, state participation in the reorganization of enterprises, etc.), while implementing measures to stimulate business development at the expense of budgets, the state can contribute to accelerating economic development. However, the expediency of spending budget funds on the implementation of economic programs in each case requires argumentation and quantitative substantiation.

According to world experience, an increase in budget expenditures for economic activity is effective only to a certain limit, which for each country has its limit value, exceeding which will be equivalent to the loss of budget funds. From this position, the total amount of expenditures or their share can not be the only criterion for optimizing the structure of budget expenditures. It is important to consider what consequences this has for the economy, in which areas of their manifestations at the moment are the most important. It is worth noting that the financing of the economic function of the state has another important effect - the obligatory adherence to the completeness and timeliness of financing of a previously defined area of economic activity. In the case of using direct budget support tools, underfunding or untimely financing jeopardizes the achievement of previously defined goals and, accordingly, not only reduces the efficiency of using budget funds, but actually turns them into direct budget losses.

We emphasize that the definition of optimization criteria is insufficient if there are problems in organizing control of budget expenditures, their purposeful use and the achievement of the desired effect. The weakness of control over the efficiency of using budget funds is one of the reasons for redistributing their part in favor of the shadow economy, and a large number of executives of budget programs contribute to exacerbating this problem. That is why we support the position of T. Zhyber that optimization of the network of executors of budget programs is necessary in order to have the minimum number of tasks for one task [8, p. 81]. Thus, an effective system of budgetary control and prevention of corruption should be included in the mandatory conditions for optimizing the structure of budget expenditures.

The government plans to increase revenues by improving tax administration, raising excise taxes, and abolishing the special tax regime. At the same time, there are a number of questions regarding the feasibility of planned non-tax revenues: it is a confiscation (UAH 10.5 billion), receipts from privatization (UAH 17.1 billion) and transfers from the NBU (transfers may be UAH 10 billion). Thus in 2017 there is a risk of not getting at least 1.4% of GDP. There is also a potential shortage of tax revenues in case of slower economic growth than envisioned by the government forecast, which will require adjustments to budget expenditures.

Regarding the structure of expenditures, in 2017 it differs little from the structure of 2016; the increase is planned in expenditures on economic activity from 3.3% of GDP to 4.1% of GDP, due to a decrease in the share of education, social protection and health care. Compared to the expenditure structure of European countries (see Figure 1), the most underfunded areas in 2016 were health (in particular, expenditures on medical goods and equipment), economic activity and nationwide functions (excluding debt servicing). According to the project in 2017, expenditures on economic activity have really come close to the European level, but on health care and nation-wide functions, expenditures relative to GDP have decreased.



Law enforcement and public order expenditures remain invariably high, and we see potential for optimization in this direction. Expenditure on higher education may also be optimized, some savings can be made in social spending in the long run, if pension reform is introduced.

In general, the government's 2017 draft budget contains a number of positive signals: it supports the structural changes needed to simplify tax administration and reduce tax privileges and includes attempts to raise public spending efficiency. However, there is also potential for improvement, since the budget is characterized by rather high inertia (the structure of both revenues and expenditures is not subject to significant changes, with some exceptions) and contains the risks of underperforming the revenue plan and as a consequence of the increase in the deficit. In this context, the following tendencies can be attributed to the negative manifestations of government actions in Ukraine:

1. Failure of recipients of benefits and taxpayers. There is a situation where taxes are paid by one group of people, but only a small group of people enjoys public goods in full. A similar situation exists in the field of intergovernmental fiscal relations, where regions receive transfers regardless of the results of their previous activities. Such discrepancies are the basis for the opportunistic behavior of economic relations participants, which can be minimized by maximizing the gap between donors and recipients of funds.
2. Politicians prefer short-term goals to strategic goals. On the one hand, such a paradox can be explained by the fact that any politician is temporarily in power, and therefore interested in realizing short-term goals. However, in our opinion, there is another specific reason in Ukraine - politicians are not always concerned with future priorities, because they do not associate themselves with only one party. In most developed democracies, the outcome of a political party is its chance to win the next election, and politicians are interested in implementing long-term development plans.
3. The state's inability to predict and control the consequences of its decisions. In its decisions, the state often acts as a rational profit maximizer, believing that a society that does not have complete information is not capable of detecting failures of the state. However, in practice, economic agents are guided not only by the actual consequences of the state's activity in their decisions, but also by rational expectations (assessing the risks of rising interest rates, inflation, etc.). As a result, measures of economic policy developed by the states will always be less effective than expected.

According to the criteria of effectiveness, the dynamics of expenditures for the implementation of the government's function of the state can be assessed by comparing the dynamics of expenditures and positions of Ukraine in international ratings. The most significant indicators are the global competitiveness of the International Economic Forum, according to which it is possible to assess not only the state of the economy in comparison with other countries, but also to give an assessment of the government's activity to ensure that the corresponding position in the rating is achieved. Also, there is a significant information load on business rankings and indices of economic freedom that makes it possible to assess the state of corruption and bureaucracy in the country, regulatory policies for doing business, fiscal freedom, etc. The state of virtually all of these parameters is the result of government activities of the state.

The volume of expenditures for the implementation of the government's function of the state is not optimal. There are reserves for their further reduction, and there is a need for increased control over such expenditures, which will allow them to increase their efficiency. Reserves for reducing government expenditures should be implemented, first of all, in reducing the bureaucracy in higher echelons of power, reducing the cost of their maintenance. In Ukraine, for years, there was a situation where the maintenance of power was expensive, and the effectiveness of the work of such a power for society was minimal.

Ukraine has the worst indicators in its group of countries, which testifies to the poor quality of the implementation of the social function of the state. As for unemployment, according to the ILO



methodology, Ukraine has not the worst indicators not only in its group, but also among the rest of the world (in particular, in France and Italy, the unemployment rate is higher). However, such assessments are superficial, given that a significant proportion of Ukrainians work abroad (including illegally). These people are not registered with the employment service and are not considered unemployed. In addition, the methodology for assessing the level of unemployment does not allow taking into account the hidden unemployment when a part of the employed in the official sector of the economy work part-time or weekly, are on leave without salary, etc. Table 3 presents the dynamics of the main structure of the state budget of Ukraine for the period from 2008 to 2016 (UAH mln).

**Table 3 - The dynamics of the main structure of the state budget of Ukraine for the period from 2008 to 2016 (UAH mln)**

Year	Incomes	Expenditures	Lending	Balance
2008	231686,3	241454,5	2732,5	-12500,7
2009	209700,3	242437,2	2780,3	-35517,2
2010	240615,2	303588,7	1292	-64265,5
2011	314616,9	333459,5	4715	-23557,6
2012	346054	395681,5	3817,7	-53445,2
2013	339180,3	403403,2	484,7	-64707,6
2014	357084,2	430217,8	4919,3	-78052,8
2015	534694,8	576911,4	2950,9	-45167,5
2016	616274,8	684743,4	1661,6	-70130,2

Source: [https://feao.org.ua/wp-content/uploads/2016/04/FEAO\\_Schodennyk\\_A5\\_web.pdf](https://feao.org.ua/wp-content/uploads/2016/04/FEAO_Schodennyk_A5_web.pdf)

Consider the equation of multiple regression, which can be represented as:

$$Y = F(\beta, x) + \varepsilon$$

Where  $X = X(X_1, X_2)$  is a vector of independent variables (the ratio of loans to GDP; the balance of the state budget to GDP);  $\beta$  is a vector of parameters (which can be defined);  $\varepsilon$  is a random error (deviation);  $Y$  is a dependent variable ratio of expenditures to the state budget revenues of Ukraine (Table 4).

**Table 4 - Data for a linear pair regression model**

Expenditures to income - Y	Loans to GDP - X1	Balance to GDP - X2
1,042161	0,0029	-0,0132
1,156113	0,003	-0,0389
1,261719	0,0012	-0,0594
1,059891	0,0036	-0,0179
1,14341	0,0027	-0,0379
1,189347	0,0003	-0,0475
1,204808	0,0031	-0,0498
1,078955	0,0015	-0,0228
1,111101	-0,0007	-0,0294



Consequently, the linear equation of multiple regression has the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon,$$

$\beta_0$  is a free member that defines the value of  $Y$  in the event when all the explanatory variables  $X_j$  are 0.

Let us calculate the average approximation error:  $A = \frac{0,0327}{9} \cdot 100\% = 0,36\%$ . Unmodified dispersion

estimation:  $s^2 = 4,3 \cdot 10^{-5}$ . Estimated RMS:  $S = \sqrt{s^2} = 0,00659$ . The partial coefficient of elasticity shows how the average percentage change in the sign-result  $Y$  with the increase of the sign-factor  $x_j$  by 1% from its average level in the fixed position of other factors of the model:

$$E_1 = -0,169 \frac{0,00196}{1,14} = -0,0002. \text{ Partial coefficient of elasticity } |E_1| < 1. \text{ Consequently, its influence}$$

on the resultant sign  $Y$  is insignificant. Let us find  $E_2 = -4,647 \frac{-0,0352}{1,14} = 0,144$ .

Partial coefficient of elasticity  $|E_2| < 1$ . Consequently, its influence on the resultant sign  $Y$  is insignificant. Determination coefficient:  $R^2 = 0,99692$ .

Trust intervals with a probability of 0.95 for the value of the resultant sign  $M(Y)$  will be:  $(Y - t * SY; Y + t * SY)$ , where  $t(9-2-1; 0.05 / 2) = 2.447$  is found according to Student's table. We have:  $(0.98 - 2.447 * 0.0048; 0.98 + 2.447 * 0.0048)$  or  $(0.97; 0.99)$ . With a probability of 0.95, the average value of  $Y$  at  $X_0$  is within the specified limits.

Trust intervals with a probability of 0.95 for the individual value of an effect sign have the form:

$$(0.98 - 2.447 * 0.00815; 0.98 + 2.447 * 0.00815) \text{ or } (0.96; 1)$$

With a probability of 0.95, the individual value  $Y$  for  $X_0$  is within the specified limits. Let us determine the confidence intervals of the regression coefficients, which with a reliability of 95% will be as follows:

$$b_0: (0.975 - 2.447 * 0.00482; 0.975 + 2.447 * 0.00482) = (0.964; 0.987);$$

$$b_1: (-0.169 - 2.447 * 0.00196; -0.169 + 2.447 * 0.00196) = (-0.169; -0.169);$$

$$b_2: (-4.647 - 2.447 * 0.147; -4.647 + 2.447 * 0.147) = (-5.007; -4.286).$$

By the maximum coefficient  $\beta_1 = 0$ , we conclude that the greatest influence on the result  $Y$  is given by factor  $X_1$ . The statistical significance of the equation is verified using the determination coefficient and Fisher's criterion. It is established that in the investigated situation, 99.38% of the total variability of  $Y$  is due to the change in the factors  $X_j$ . It is also established that the model parameters are statistically significant. We find an unbiased estimate of the mean-square deviation.  $Se = 0.0057$ ,  $Rs = 3.177$ . The calculated value of the RS-criterion falls into the interval  $(2.7, 3.7)$ , hence, the property of the normal distribution is fulfilled. Thus, the model is adequate for the normal distribution of the residual component.

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

$$Y = 0,9754 - 0,169X_1 - 4,6467X_2.$$



Possible economic interpretation of model parameters: an increase in the ratio of loans to GDP -  $X_1$  by 1 unit leads to a decrease in the ratio of expenditures to the revenues of the state budget of Ukraine -  $Y$  on average by 0.169 units; an increase in the ratio of the state budget to GDP -  $X_2$  by 1, leads to a decrease in the ratio of expenditures to the state budget revenues of Ukraine -  $Y$  on average by 4,647 units.

By the maximum coefficient  $\beta_1 = 0$ , we conclude that the greatest influence on the result of  $Y$  is given by the ratio of loans to GDP. The statistical significance of the equation is verified using the determination coefficient and Fisher's criterion. It is established that in the investigated situation, 99.38% of the total variability of  $Y$  is due to the change in the factors  $X_j$ . It is also established that the model parameters are statistically significant.

#### 4. CONCLUSIONS

Thus, according to some performance criteria, the structure of budget expenditures in Ukraine is also not optimal. The obtained results testify to the absence of a clear strategy for the development of the state regarding the provision of welfare of the population. Although the budget plays a leading role in the redistribution of income, it is not able to provide a level of social development of Ukraine at the level of Western European countries.

Given that redeployment can only be what was previously accumulated, the budget is not able to cover the needs of the entire society in qualitative social benefits. But, on the other hand, this process should not take place entirely at the expense of the budget, as social budget expenditures should be directed, first of all, to social protection of the most vulnerable segments of the population.

In a country where the whole burden of social burden is shifted to the budget, there is a distortion of development priorities, and the budget itself becomes an instrument for achieving short-term political goals that are not always consistent with the strategy of economic development.

The identified disproportions in the structure of budget expenditures slow down further development of the country, which is why optimizing the structure of expenditures for the criteria defined in this section is one of the main tasks in managing budget funds.

#### REFERENCES:

1. Yaroshenko F.O. (2010) Reformuvannya budzhetnoi systemy Ukrainy na innovacijnyh zasadah [Reforming the budgetary system of Ukraine on an innovative basis]. Kyiv: Ministry of Finances of Ukraine – 544 p. (in Ukrainian)
2. Uga I The role of tax revenues in the formation of the state budget of Ukraine// Культура народов Причерноморья. — 2013. — № 259. — pp. 84-87.
3. Robinson, M. Budget reform before and after the global financial crisis. OECD Journal on Budgeting, 2016, 16.1, p. 29–63.
4. Kim, S., Wang, Q. State budget periodicity and general expenditure volatility: an empirical analysis. Journal of Public Budgeting, Accounting & Financial Management. 2015, 27/4, p. 419–454.
5. Butautas, D. Modernūs Lietuvos ateities finansai. Vilnius: [s.n.], 2016. Finansų ministerija (2016).



6. Valstybės biudžetovykdyduomenys, [interaktyvus], 2016, [2016-03-21].
7. Frankel, J., Schreger, J. Over-optimistic official forecasts and fiscal rules in the euro zone. *Review of World Economics*, 2013, 149/2, p. 247–272.
8. Zhyber T.V. (2009) Udoskonalennya procesu bjudgetuvannja v Ukraini [Improvement of the budgeting process in Ukraine]. *Finances of Ukraine* No 8, pp.76-81.