The object of the research is the budget expenditures for the state order funding. One of the most problematic places is, on the one hand, the lack of financial resources, and on the other hand, the low efficiency of their allocation. Using the method of vertical and horizontal analysis, the expenditures of the consolidated budget for higher education are explored by the example of Ukraine. It was found that the share of the consolidated budget of Ukraine for higher education in % of GDP is one of the largest in Europe, however, the amount of funding is insignificant in monetary terms, which makes it impossible to improve the quality of higher education. The amount of the state order for training of specialists and expenditures of the consolidated budget are analyzed. On the basis of the results of the analysis of the legislation, the impact of elements of the system of formation and state order placement on its effectiveness is assessed. During 2012–2020, the consolidated budget expenditures tended to increase (except for the crisis of 2020, when there was a general economic growth disruption). At the same time, the number of budget places reduced annually until 2018. The analysis of the system of the state order allocation showed that during 2012–2020 it had been changed several times. The main advantages and disadvantages of the system of state order allocation at the stages of its transformation are identified in the paper. Until 2015 the state order allocation was carried out manually. Since 2017 a mechanism for state order addressing has been introduced. In 2020 the mechanism of cost allocation between higher education institutions was changed and indicative prices were introduced. Due to the analysis of the conditions of state order allocation and cost allocation between higher education institutions, it is possible to take into account the main factors that contribute and block the efficiency and effectiveness of funding the higher education system in Ukraine.

Keywords: funding model, budget expenditures, higher education, state order, allocation criteria.
3. The aim and objectives of research

The aim of research is to analyze the state order and the consolidated budget expenditures on its funding.

The aim achievement requires performing following scientific objectives:
1. To analyze the amount of expenditures of the consolidated budget for higher education and to evaluate its adequacy.
2. To assess the dynamics of the state order for training of specialists and peculiarities of its allocation between educational institutions.
3. To determine the main features of the allocation system of the state order at the stages of its transformation.

4. Research of existing solutions to the problem

The papers of many scientists are devoted to the study the system of higher education funding in general and state order in particular. Thus, in [1] it is emphasized the importance of higher education funding in a sufficient amount as a necessary condition for education quality. According to the authors, education is a guarantee of not only personal development of citizens, but also of economic stability of the state. The case of revising the taxation system to ensure the necessary amount of resources is still up.

The authors [2] confirm that the state educational policy, as a component of social policy, is one of the tools of state influence on the social structure formation, it directed at solving public problems. The paper [3] the components of higher education funding and transparency of access to the resources are analyzed. The emphasis on the necessity of using the optimal criteria for the funding allocation, which have not yet been defined, is done. Alternative approaches to state order funding are considered in [4, 5], besides with the positive characteristics of the formulaic approach to the allocation of budget resources, the disadvantages of using that tool are considered. The special attention deserves analysis, presented in the reports [6, 7].

However, despite the pandemic, in 2020 in most European countries there was no funding reduction. It confirms the sustainability and reliability of financial support systems of higher education, but does not recognize the adequacy of expenditures (reduction of higher education expenditures in % of GDP).

Imperfection of financial support of higher education in Ukraine is shown in papers [3, 8]. In addition, according to the authors of the study [9, 10], the national system of higher education funding is inefficient, the authors describe the world experience of funding systems, as well as using the practice of result-oriented funding and block funding system.

The study [11] is to noted, it also provides a extended analysis of the experience of organizing the system of higher education funding in Europe and the CIS, assess the effectiveness of the state order allocation, taking into account the population segment.

Thus, the results of the analysis allow to conclude that the system of higher education funding in Ukraine has a number of significant shortcomings. At the same time, the issues of changes in the system of higher education funding in 2020 are not adequately investigated: the reform of the system of funding allocation of between higher education institutions, on the one hand, and the implementation of indicative prices, on the other hand.

5. Methods of research

General and special research methods were used in the paper:
- analysis and synthesis – to study the system of state order and to identify problems in its operation;
- vertical and horizontal analysis – to study the dynamics and structure of expenditures on higher education, as well as expenditures for state order funding;
- analysis of legislation – to assess the impact of certain elements of the organization of the system of state order formation and system of allocation the state order on the training of specialists and its effectiveness.

6. Research results

The model of higher education funding, which has been usual for many years and was represented by the allocation the fixed amount of the state order for the training of specialists between educational institutions of state (communal) ownership, has serious changes over the last five years. The volume of consolidated budget expenditures on higher education (Table 1) tended to increase in monetary terms. Despite the fact that the share of expenditures on higher education in % of GDP varied, this indicator remains one of the highest among European countries. But the amount of expenditure per student in Ukraine is much lower than in European countries.

One of the main components of expenditures on higher education is the state order funding – the state payment for training of specialists. Let’s analyze the legal framework for organization of the system of state order formation and allocation.

According to the Law of Ukraine dated 20.11.2012 No. 5499-VI [14] state order was generated taking into account the medium-term forecast of the demand for personnel and workers in the labor market and the amount of expenditures of the State Budget of Ukraine for these purposes.

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<tr>
<td>Consolidated budget expenditures on higher education, million US dollars</td>
<td>3.7</td>
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<tr>
<td>Consolidated budget expenditures on higher education, % of GDP</td>
<td>2</td>
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Source: developed by authors based on data [12, 13].
The medium-term forecasting was made in accordance with [14], and included, in particular, the following indicators:
- demand and supply of labor in the labor market;
- the number of registered unemployed by type of economic activity;
- the number of graduates of higher education institutions and technical school, in particular, those who studied by state order;
- reporting data for the 4 previous years and for the current year on the amount and indices of gross domestic product, etc.

The cost of training of specialists was calculated in accordance with the Order of the Cabinet of Ministers of Ukraine dated 20.05.2013 No. 346-2013-n [15] and included 11 indicators, in particular:

1) remuneration of employees who provide training for one skilled worker, specialist, graduate student, doctoral student, student;

2) charge on payroll;

3) cost to pay an academic scholarship, etc.

The criteria for choosing the executors of the state order in accordance with the Order of the Cabinet of Ministers of Ukraine dated 20.05.2013 No. 363-2013-n [16] include:
- possession of a license for the right to provide educational services;
- conclusions of the expert commission and the expert council at the accreditation commission, in particular, by the level of staffing for training of specialists;
- approval the project indicators of the amount of the state order with regional employment centers, and also with executive authority.

The state customer could also establish other criteria for competitive selection.

The selection criteria left a number of questions. For example, the right to establish other criteria for competitive selection provided opportunities to reduce the level of objectivity of the competition. Conclusions of the expert commission and the expert council at the accreditation commission are the basis for the accreditation, but not the quality indicator for competitive selection.

Since 2015, the following indicators have been taken as a basis to the competitive selection criteria:
- economic efficiency;
- quality of scientific affair;
- research and development commercialization;
- total number of students and percentage of foreign students;
- staffing;
- international activities;
- relations with graduates, their employment and career growth, etc.

Some of these indicators are not qualitative, but quantitative, for example, the total number of students and the number of scientific staff and scientific-pedagogical staff. These indicators strengthen the position of large universities and make it impossible to compete with them for regional (narrowly specialized) universities. Relationships with graduates, their employment and career growth are subjective indicators. The certificates of graduates’ employment cannot match criteria for the quality of the educational institution in the absence of a centralized system of job control.

The lack of a centralized rating system was one of the factors of low level of objectivity in the state order allocation between higher education institutions (HEIs). Ratings were created by areas of knowledge or from the point of employers, the selection criteria for them were not published [11].

Definitely, this approach to the process of state order processing is reasonable and considered from the point of calculation the cost of training one specialist. However, the objectivity of calculations and transparency of this approach kept gaps, which reduced the level of its transparency. This is the case of both the calculation of the cost of training one student (overrating or underrating), and of establishing additional criteria for competitive selection by the State Customer.

The Report of the Accounting Chamber «On the results of the analysis of the formation, allocation and execution of the state order for the training of specialists with higher education» indicates, in particular, but not exclusively, a number of contraventions of procedure for formation and allocation the state order [17]:
- discrepancy (significant over limits) of the calculated cost of training one specialist using budget funds (on the example of Taras Shevchenko National University of Kyiv 95.33 thousand UAH or 6.05 thousand USD) and the cost of contract training (30 thousand UAH or 1.9 thousand dollars). On the one hand, HEIs overrate the calculated cost of training, on the other hand, underrate the cost of contract training. The second allows to engage more contractors for training, and the first – to cover the lack of funds at the cost of scholarship student;
- a substantial difference in the cost of training in different HEIs; calculation the value of state order funding in the amount not less than the amount of last year expenditures of the State Budget of Ukraine, increased by the inflation rate (Article 72 of the Law of Ukraine of 01.07.2014 No. 1556-VII [18]). On the one hand, this allows to fix the minimum amount of funding. On the other hand, it allocates funds on costs in accordance with the Methodology of 20.05.2013 No. 346-2013-n [15] not for the number of state order places, but for last year’s value. In terms of annual reduction in the number of entrants;
- cost of training one specialist increases in monetary terms;
- difference between the indicators of the medium-term forecast of the demand for specialists and workers (according to the forecast in 2013 for 2015 – 151,241 people, according to the forecast in 2014 for 2015 – 34,100 people) and the amount of the state order (139,511 people);
- violation of deadlines for submission of bids from state customers, information forms of indicators of the approximate average cost of training, lack of budget requests, approved passports of budget programs and changes to them;
- duplication of state order placement in the network of educational institutions of several state customers (for example, the state order of the State Border Guard Service of Ukraine was made both in the National Academy of the State Border Guard Service of Ukraine and the National Academy of Security Service of Ukraine);
- violation of the procedure for allocation the state order (making decisions in the absence of a quorum, allocation by hand);
- state order for non-major specialties for the institution;
formation of quotas for the privileged category «Rural Youth» by regions and major; 
planning funds for the training of specialists, based not on the cost of training per specialist, but as funds to hold the budgetary institution.

In 2015 the approach to the state order allocation was changed. The number of places for each educational institution remained fixed. At the same time, the Terms of Admission in 2015 implemented the rule for entrants of bachelor’s degree to use priority – an indicator that the enrollees personally assigns to their applications, where 1 is means the highest priority of applications. The recommendation for the state order place was given in the automatic mode using the Gale-Shapley algorithm.

In 2016 the state order was not allocated between educational institutions before the start of the admissions process, as it was in previous years, the allocation was carried out automatically and based on the number of applications from enrollees with high scores. Thus, the state order places began to concentrate in the educational institutions popular for entrants, taking into account the priority of applications. It was the turning point in the organization of the allocation system of the state order.

The Terms of admission in 2017 introduced the concept of «wide volume of the state order (supervolume)». This is the number of state order places for open tender proposal, where the recommendation for state order place may be given. Thus, the state order allocation has begun to be carried out automatically. First of all enrollee won the right to study at the budget expense on the basis of a competitive score, and then on the basis of the applications priority and the maximum limits of the state order received a place in the chosen educational institution.

This model of state order allocation had a high level of objectivity. The minimal effect of the human factor enabled providing budget places not to educational institutions, but to entrants on the basis of competitive selection (address placement). However, the algorithm had serious defects. For example, in the first year of introduction the maximum and minimum amount of state order was not taken into account by all educational institutions and the entrants as well. Due to several groups of restrictions (competitive score, priority of applications, amount of state orders) many entrants with high competitive scores hadn’t receive recommendations for the budget places. The state order allocation was not proportional. For example, 48 of 65 state order places for the major 293 «International Law» are concentrated in one university, 132 of 191 places in the major 292 «International Economic Relations» went to 5 institutions. Such centers of concentration of state order often took place in popular for entrants educational institutions, but non-major specialties for those institutions. In addition, state order was concentrated mainly in the capital’s HEIs, less in Kharkiv, Lviv, and Odesa, so a course to close regional universities was taken. According to the Law of Ukraine «On Higher Education» [18], the state budget has to fund 180 students for each 10 thousand population (Article 72, paragraph 8). The Council of Rectors of Odesa Region proposed the idea of regionalization – the allocation of state orders taking into account the population of the region [19]. We bring up a proposal to strengthen the regional HEIs by increasing the indicator Regional coefficient (at that time 1.0 – for Kyiv, 1.04 – in Donetsk, Zhytomyr, Kirovohrad, Luhansk, Mykolaiv, Rivne, Sumy, Kherson, Khmelnytsky, Chernihiv, Cherkasy regions; 1.02 – in other cases).

Until 2020 the number of students was the basis for funding higher education institutions, it was the reason for universities to keep students in HEIs, regardless of learning outcomes. In 2020, the system of higher education funding was changed on both sides.

From 2020 in accordance with the Order of the Cabinet of Ministers of Ukraine dated 24.12.2019 No. 1146 [20], educational institutions of Ukraine began to be funded on the basis of a formula approach. The formula includes indicators: stable activity funding, funding depending on the performance indicators and funding of the reserve. The complex performance indicator is based on 7 components (one of which is the number of students). Thus, it was a step to shift the focus of funding from the number of students to the quality indicators of the HEIs activity. At the same time, the formula is quite subjective, the indicators included in it correspond to the license terms of educational activities partly. At the same time, the formula does not meet the real needs of institutions, but only allocates the funded amount of expenditures between higher education institutions.

On the other hand, the Order of the Cabinet of Ministers of Ukraine «Some issues of introduction of indicative costs» [21] entered into force. From September 1, 2020, the cost of educating for students who did not receive a state order place was calculated on the basis of indicative cost. This is the amount of actual costs per one student of a certain provider of educational services, which are directly related to the cost of providing the educational services for the training of specialists with higher education on the terms of the state (regional) order. The indicative cost is set for 38 popular majors, adjusted by an index according to the level of higher education and the form of study. In 2022, educational institutions will have to set the cost of contract training at least 80 % of the cost of training of scholarship student. This means that if the institution provided training in certain 38 majors and had small amount (or had not at all) of state order for technical specialties, it had to raise prices for educational services. The implementation of indicative cost has become a new difficulty for the activity of regional universities. The increase in education price at regional universities has reduced their attractiveness for entrants, as the difference in the cost of education at regional and capital universities has decreased significantly. Private universities received a more favorable position, as they had not liability to apply the formula of indicative cost to calculate their education price, and therefore in some cases set prices lower than in state universities. It was found out that the education price for the same majors could differ 1.5–2 times in institutions of one region. Moreover, much lower prices for social and humanitarian majors were set in institutions that were focused on technical specialties, it again brings up an issue of profissionalisation of institutions. Regionalization in the context of setting educational price could also be a useful proposal. The upper limit of the price is three average monthly salaries of full-time employees in the region. The educational price can also be a regional average.

Obviously, the system of state order funding remains inefficient. It makes sense to consider the updatability of moving from a state order system to a higher education credit system.

Let’s analyze the amount of expenditures on higher education and the amount of the state order (Fig. 1) [12, 22].
According to Fig. 1 there is a conclusion that the dynamics of consolidated budget expenditures for training of specialists with higher education during 2012–2019 tended to increase. In 2020 the funding was reduced. A separate item of state budget expenditures is the training of specialists by Taras Shevchenko National University of Kyiv, which is growing every year. During 2012–2018 the amount of state order decreased annually. Starting from 2019 the number of budget places increases.

**7. SWOT-analysis of the research results**

**Strengths.** The strengths of the study are the analysis of the impact of legislation of the organization of the system of state order formation and allocation, it’s effectiveness in the higher education system. The main shortcomings of the state order system are described. From the point of view of state order allocation between entrants: the system of wide competition does not guarantee entrants with high scores to receive state order places. From the point of view of HEIs funding: until 2020 the distribution of financial resources was non-transparent, from 2020 due to implemented Formula approach, the distribution became more transparent, but the emphasis is still on supporting the capital’s educational institutions. The paper includes proposes to move from the model of state order funding to the model of higher education credit system to increase the level of efficiency and effectiveness of public investment in education.

**Weaknesses.** The analysis indicated that even a highly efficient system of state order allocation cannot be effective under constant lack of financial resources. The model of higher education organization, chosen in Ukraine, is a way to implement the experience of European countries, but it cannot be supported by resources as it available in foreign countries.

**Opportunities.** It should be noted that in the future the analysis of the system of allocation may be done in the field of studying the comparison between the expenditures on state funding and incomes from contractors. The research can be useful for assessing the system of higher education funding both on the basis of manual mode of budgetary resources allocation and on the basis of the allocation formula.

**Threats.** The threats of studying the state order include the other factors that directly or indirectly have an influence on the system of its allocation and are not taken into account in the analysis. For example, a comparison of admission requirements and education price in Ukrainian and foreign HEIs has to be a special study.

**8. Conclusions**

1. Consolidated budget expenditures on higher education of Ukraine are considered. It is found that the amount of expenditures increases annually in the national currency (from 29.3 billion UAH in 2012 to 53.4 billion UAH in 2020), but decreases in dollar equivalent (from 3.7 billion USD to 1.9 billion USD). Also, its share in % of GDP decreases (from 2.0 % to 1.3 % during the analyzed period), which repeats the European trend, however, the total expenditure is uncompetitive in comparison with European level.

2. Analysis of the amount of the state order for training of specialists and consolidated budget expenditures showed that the share of higher education expenditures in the total budget expenditures is quite high (16.8 % compared to 11.0 % in Norway), but in monetary terms expenditures per one student in Ukraine are much less than per European student (7.0 euros in Ukraine, compared to 13.5 euros in Norway). The proposal is to increase the amount of funding. The system of the state order allocation had a low level of transparency, today the level of transparency of the system is high, but the system does not guarantee a place of the state order to entrants with high competitive points. The state order continues to be concentrated in the capital’s universities (according to the Allocation Formula in 2020, 43.7 % of the total funding directed to the fund HEIs in the cities of Kyiv, Kharkiv, and Lviv). The proposal is to increase the indicator «Regional coefficient» in the formula for calculating the competitive score for entrants.

3. The study of the legislation for the state order formation allows to determine the main characteristics of the system of state order allocation at the stages of its transformation from manual mode to automatic mode. The system of state order funding, introduced in 2020,
is based on the formula approach, it has increased the level of objectivity of state order allocation, however, some components of the formula need to be clarified. The proposal is to consider the updatability to implement a higher education credit system.

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