CREATING A SYSTEM OF EVALUATION OF EFFICIENCY OF STATE SUPPORT POLICY FOR INNOVATIVE ENTREPRENEURSHIP

Urgency of the research. The following article reveals the processes of globalization in world economic relations which actualize further research of problems of state support for innovative entrepreneurship.

Target setting. During the period of independence in Ukraine the procedure of governmental encouragement for individual branches and sectors in the national economy was rather haphazard. Most budget-funded and purpose-oriented programs of state support did not include a clear system of evaluation of its implementation efficiency.

Actual scientific researches and issues analysis. Numerous scientific works have been already dedicated to the search of optimal methods of evaluating the efficiency of certain measures in state economic policy: Fang-Ming Hsu, T. Boyko, Yu. Shkvoretz'.

Uninvestigated parts of general matters defining. Existing scientific approaches do not take into account all specifics of current situation regarding the implementation of certain measures of state support policy for innovative entrepreneurship.

The research objective. The purpose of the following article is to substantiate a scientific approach to the evaluation of efficiency of state support policy for innovative entrepreneurship.

The statement of basic materials. In the article evaluation system of efficiency of state support policy for innovative entrepreneurship has been represented.

Special criteria for evaluation of efficiency of state support policy for innovative entrepreneurship, which are precisely budget, economic and infrastructural criteria, have been formed. Efficiency levels of measures of state support policy for innovative entrepreneurship have been suggested. Calculations of integral index have demonstrated a low efficiency level of state support policy for innovative entrepreneurship.

Conclusions. The carried out research has proved the necessity of improving particular scientific approaches concerning the evaluation of efficiency of state support policy for innovative entrepreneurship.

Keywords: innovative entrepreneurship; state support; government funding; efficiency.

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ФОРМУВАННЯ СИСТЕМИ ОЦІНЮВАННЯ ЕФЕКТИВІСТІ ДЕРЖАВНОЇ ПОЛІТИКИ ПІДТРИМКИ ІННОВАЦІЙНОГО ПІДПРИЄМНИЦТВА

Актуальність теми дослідження. У статті зазначається, що процеси глобалізації світово-господарських відносин актуалізують дослідження проблематики державної підтримки інноваційного підприємництва.

Постановка проблеми. Протягом незалежності України, державне стимулювання розвитку окремих галузей та секторів національної економіки відбувалося безсистемно. Бюджетні та цільові програми державної підтримки, переважно, не містили чітки системи оцінювання ефективності їх реалізації.

Аналіз останніх досліджень і публікацій. Пошуку оптимальних методів оцінювання ефективності заходів державної економічної політики присвячено праці багатьох вчених: Ф. М. Хсю (Fang-Ming Hsu), Т. Бойко, Ю. Шкворець.

Виділення недосліджених частин загальної проблеми. Існуючі наукові підходи до оцінювання ефективності заходів державної підтримки інноваційного підприємництва здійснювали базові вчені: Ф. М. Хсю (Fang-Ming Hsu), Т. Бойко, Ю. Шкворець.

Виклад основного матеріалу. У статті зазначено, що обґрунтування наукового підходу до оцінювання ефективності державної політики підтримки інноваційного підприємництва не повною мірою враховують спеціфіку сучасного стану реалізації заходів державної політики підтримки інноваційного підприємництва.

Висновки. Проведене дослідження зосередилося на визначенні недосконалістів державної політики підтримки інноваційного підприємництва.

Ключові слова: інновації підприємництва; державна підтримка; бюджетне фінансування; ефективність.
Urgency of the research. Processes of globalization in world economic relations actualize the research of specific problems in state support for innovative entrepreneurship. Its necessity has been determined by numerous factors, among which it is expedient to distinguish the following: disproportionality of economic development; differentiation of social significance within the types of business activity; shortage of time factor; need for prioritizing the development of certain sectors of economy; reduction of unemployment level accompanied by increasing incomes. The abovementioned factors confirm the relevance of chosen research topic.

Target setting. During the period of independence in Ukraine the procedure of governmental encouragement for individual branches and sectors in the national economy was rather haphazard. Most budget-funded and purpose-oriented programs of state support did not include a clear system of evaluation of its implementation efficiency.

However, we believe that in this process interests of all its members should be coordinated in the following way: interests of the state which is, on the one hand, a totality of institutions implementing certain measures of business development support, and on the other hand, a special entity of economic relations which directly or indirectly accumulates a part of results coming from the implementation of incentive measures; economic entities which are recipients of support measures and manufacturers of products/services; population which is a source of economic development.

Actual scientific researches and issues analysis. For today there is no consistent approach as for the correlation of public and market instruments within the mechanism of state support for innovative entrepreneurship.

Numerous scientific works have been already dedicated to the search of optimal methods of evaluating the efficiency of certain measures in state economic policy. Thus, in the research by the authors Fang-Ming Hsu and Chao-Chih Hsu (1) a particular approach to the evaluation of comparative effectiveness of state scientific and research projects has been presented. In the work by researcher T. Boyko (2) several approaches concerning evaluation of efficiency of regulation mechanism in the administrative activity of business cluster have been summarized.

From the scientific point of view there is one more interesting work (3), in which evaluation indicators of effectiveness of governmental funding for administrative authorities on science, innovation and education have been suggested.

Uninvestigated parts of general matters defining. At the same time scientific works by the authors mentioned above have not considered all specifics of current situation concerning the implementation of certain measures of state policy support for innovative entrepreneurship. This determines the expediency of further development of scientific approaches to the evaluation of efficiency of state support for innovative entrepreneurship.

The research objective. The purpose of the following article is to substantiate a scientific approach to the evaluation of efficiency of state support policy for innovative entrepreneurship.

The statement of basic materials. Effectiveness of state support measures is a relative concept, which can be defined by means of comparison, as well as matching numerous quantitative and qualitative characteristics. The database for comparison, conclusions and evaluation of efficiency level usually have conditional nature, they are primarily indicative and differ from each other depending on the comparison base, methods of determining costs and benefits, availability of reliable information (4).

Still, it is advisable to agree with one more resource (5) in order to determine the results of state intervention in the economy and estimate them; even if there is accurate data together with precise methodology for calculation and comparison of indicators and relevant criteria, it could be quite difficult due to the specificity of administrative activity.

We believe that the process of determining the effectiveness of implementation of state support measures can be defined as a scientifically grounded sequence of evaluation and analytical data processing, which make it possible to form a proper conclusion as for the expediency of implemented measures (6, p. 56).
Generalization of scientific papers has allowed us to develop some conceptual approaches to the evaluation of efficiency of state support policy for innovative entrepreneurship. The algorithm of evaluation procedure is shown in Fig. 1.

The purpose of evaluation is to obtain a firm conclusion as for the expediency of implemented measures of state support for innovative entrepreneurship. Also, the auxiliary objectives are [6, p. 56]: to create necessary preconditions for searching reserves of efficiency increase; informational support of decision making when implementing particular measures of state incentives.

| Articulation of evaluation purpose, objectives and principles |
| Selection of the method of evaluation and criteria formation |
| Selection and substantiation of the system of indicators, determination of weight coefficients |
| Formation of database for evaluation, limitation of indicators |
| Calculation of partial indices |
| Calculation of integral index |
| Analysis and analytical evaluation of obtained results |

Fig. 1. The sequence of stages of efficiency evaluation of state support policy for innovative entrepreneurship

Source: [6, p. 57]

An important stage in the whole process of evaluation of efficiency of state support measures for innovative entrepreneurship is selecting appropriate methods.

Considering the methodological basis for the evaluation of efficiency of state policy, researcher O. Lihavenko has determined the most appropriate evaluation methods, which include statistical methods (grouping, structural shifting, trending, elasticity coefficients, correlation), regulatory methods, expert (judgement-based) methods, economic and mathematical methods, simulation approach and balance methods [7].

However, in our opinion, the most reasonable and logical approach is to unite the existing evaluation methods into three groups. In this context, in the scientific work [8, p. 302-311] it has been suggested to differentiate the following groups: expert (judgement-based) methods, expert and statistical methods, as well as methods of statistics.

At the same time, in our opinion, the use of purely expert methods is controversial, due to the high degree of their subjectivity. Combined methods, such as expert and statistical methods, are used mainly by state authorities.

We believe that the use of statistical methods is the most reasonable approach, since it allows to reduce the impact of subjective factors. Moreover, in case of their application it is possible to use a computer, that greatly simplifies the evaluation procedure and increases the accuracy of calculations.

As for statistical methods, among the most commonly used one can mention the method of index numbers, the method of calculation of multidimensional average and some other.

An important issue in the process of efficiency evaluation is selection of evaluation criteria. The concept of «efficiency criterion (performance criterion)» defines a feature or a set of features, on which basis the efficiency of state support can be evaluated. Fundamentally, each efficiency criterion is based on the principles of state regulation as they provide objectively specified and

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regulatory requirements, which have been worked out by state regulation practice and means of regulation of coherence between the objectives and results [9].

The question of determination of efficiency criteria of state public support measures in the context of implementing tax benefits have been considered in sufficient detail in the following work [10, p. 203]. The researcher suggests the calculation of fiscal, economic, social and budgetary efficiency [10, p. 203].

On the other side, researcher Boyko T. Yu. examines the problem of evaluation of management efficiency through the indicator of profitability [2, p. 19]. According to the author [2, p. 19] this indicator should be defined concretely through the calculation of profitability indicator of administrative activity by a particular business cluster, which will help to identify, for which association members the process of regulation has been carried out inefficiently.

In our opinion, the abovementioned scientific approach is rather simplified and does not enable a comprehensive evaluation of efficiency of state support measures.

An algorithm and a set of indicators for efficiency evaluation are also determined by in force normative legal acts.

For example, according to the Decree of the Cabinet of Ministers of Ukraine «On Approval of the concept of applying the program and result-oriented approach in the budgetary process» [11] 457 quantitative and qualitative indicators have been determined. However, the analysis of suggested approach, given in the resource [5], has proved its controversy in terms of indicators. Among 243 high-performance indicators of efficiency and 214 indicators of quality, only 7 and 20 indicators respectively were specifically aimed at social and economic result [3; 5].

In addition, we believe that a large number of indicators significantly complicates the entire procedure of efficiency determination without any guarantee of higher objectivity and representativeness, and, on the contrary, it increases the probability of oversight and/or distortion of results.

Another approach, which is described in the normative legal act [12], is more pragmatic and reasonable. In this case, high-performance indicators have been divided into the following groups [5]: indicators of expenses which define the scope and structure of resources ensuring the budget program implementation; indicators of product which are used to estimate the achievement of objectives; indicators of efficiency (performance indicators) which are defined as the correlation of the number of produced goods (completed works or provided services) to their value in monetary or human measuring (the rate of resource consumption per one unit of product); quality indicators which are reflecting the quality of produced goods (completed works or provided services).

Unfortunately, the abovementioned criteria and groups of indicators do not fully characterize the process of implementation of state support measures.

Therefore, it is necessary to develop such criteria and indicators on the basis of which it will be possible to calculate the efficiency of implementation of state support measures.

We believe that evaluation of implementation efficiency of measures of state support policy for innovative entrepreneurship development should be carried out according to three criteria, along with the definition of partial indices for each of them [6, p. 58]. A detailed analysis and generalization of the abovementioned approaches have allowed us to create the following criteria for evaluation of efficiency of state support policy for innovative entrepreneurship [6, p. 58].

1. Budget criterion: the share of revenues from innovative entrepreneurship entities (innovatively active enterprises) in the total amount of state budget income, %; the amount of taxation and other revenues from innovative entrepreneurship entities (innovatively active enterprises) per 1 employed in this sector, thousand UAH.

2. Economic criterion: the share from the sales of innovative products in the total amount, %; the volume of sold innovative products, as well as scientific and technical services per 1 employed in this sector, thousand UAH; the coefficient of expenditures on innovation to the volume of sold innovative

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products; the share of innovative products in the merchandise exports of Ukraine, %; the balance of foreign trade of innovative goods and services (or high-tech products), million USD.

3. Infrastructural criterion: the number of protection documents, thousand pcs; the share of innovatively active enterprises, %.

The system of indicators for an objective analysis of state support efficiency is not exhaustive, and, if necessary, it can be complemented by other indicators, thus allowing it to achieve higher universality.

By using a scientific approach, described in the resource [13, p. 6], for getting the quantitative evaluation of management efficiency in the form of final integral indicator, a number of consecutive procedures should be implemented: formation of weight coefficients (coefficients of importance) of indicators for efficiency (performance) evaluation; calculation of partial indicators for efficiency evaluation; calculation of complex (integral) evaluation of management efficiency; interpretation of results received from the calculations.

Generalization of information [14] has allowed us to determine the weight of indicators:
- by the criterion of budget efficiency – 1.1 and 1.2 for 0,5 each;
- by the criterion of economic efficiency – 2.1 for 0,15; 2.2 for 0,2; 2.3 for 0,25; 2.4 and 2.5 for 0,2 each;
- by the criterion of infrastructural efficiency – 3.1 and 3.2 for 0,5 each.

The next stages foresee the calculation of partial and integral indices according to the formula given in [14]. For the purpose of interpreting received values of integral index, we have suggested certain levels of efficiency of measures of state support policy for innovative entrepreneurship (Tab. 1).

### Levels of efficiency of measures of state support policy for innovative entrepreneurship

<table>
<thead>
<tr>
<th>Indicator value</th>
<th>Characteristic of level</th>
<th>Degree of state support intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0,2</td>
<td>critical</td>
<td>maximum</td>
</tr>
<tr>
<td>0,2-0,5</td>
<td>low</td>
<td>maximum</td>
</tr>
<tr>
<td>0,5-0,75</td>
<td>inertial</td>
<td>selective</td>
</tr>
<tr>
<td>0,75-1,0</td>
<td>high</td>
<td>pointlike</td>
</tr>
</tbody>
</table>

Source: [6, p. 58]

Using the data from State Statistics Committee [15; 16] and results of expert and analytical assessments [17], we have calculated partial and integral indices for efficiency evaluation of state support measures for innovative entrepreneurship (Tab. 2).

### Calculated values of indices for evaluation of efficiency of state support

<table>
<thead>
<tr>
<th>Criteria</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>partial indices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.0873</td>
<td>0.07565</td>
<td>0.06618</td>
</tr>
<tr>
<td>Economic</td>
<td>0.281</td>
<td>0.26675</td>
<td>0.24739</td>
</tr>
<tr>
<td>Infrastructural</td>
<td>0.61715</td>
<td>0.6043</td>
<td>0.61547</td>
</tr>
<tr>
<td>integral index</td>
<td>0.27075</td>
<td>0.25782</td>
<td>0.24852</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations

Calculations of integral index have demonstrated a low efficiency level of state support policy for innovative entrepreneurship.

**Conclusions.** The process of efficiency evaluation requires constant improvement due to the specificity of its purpose: the possibility to receive objective information by means of which the level of object’s development can be observed, identification of trends for the improvement of existing situation and for making adjustments both within particular activity and directly into the very system of evaluation, concerning its criteria and indicators [5]. Application of this process [18] it helps to improve the quality and transparency of governmental activities, since the evaluation results are always
accessibile to the wide public. Among the prospects for further research there is improvement of the procedure of efficiency evaluation of state economic policy.

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