

UDC 338.22: 330.131.5

DOI: 10.15587/2313-8416.2016.74409

PREVENTING THREATS AS A PRECONDITION TO INCREASE THE LEVEL OF ECONOMIC SECURITY OF THE STATE

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In the article, the necessity for the implementation and realization of mechanism for preventing threats to the economic security of the national economy is grounded. It is highlighted that ensuring economic security of Ukraine's economy under current conditions is based on situational response to emerging threats, resulting in the process of their elimination and neutralization of negative influence

Keywords: economic security of the state, threats to the economic security, preventing threats

У статті обґрунтовано необхідність запровадження та реалізацію механізму упередження загроз економічній безпеці національної економіки. Акцентовано увагу, що забезпечення економічної безпеки економіки України в сучасних умовах ґрунтується на ситуативному реагуванні на загрози, що вже виникли, і внаслідок цього має місце процес їх ліквідації та нейтралізації негативного впливу

Ключові слова: економічна безпека держави, загрози економічній безпеці, упередження загроз

1. Introduction

In terms of the situation in Ukraine's economy under pressure from both economic and non-economic factors there is critical increase in threats to the economic security of the national economy especially in connection with the emergence of additional, fundamentally new challenges for Ukraine. The scale of economic threats requires a solution to the problem of priority economic security at the national level. Disregard to economic security can lead to disastrous consequences: the decline of the economy and undermining support system of the nation, followed by the loss of sovereignty. Separate and independent state is such that is able to provide economic security at all levels.

Destabilization of the national economy and global issues that are on the agenda and pose significant threats to the economic security of Ukraine, preventing the effective development of the national economy, lead to the necessity of creation and implementation of effective prevention system of threats as a basic precondition for improving economic security of the state.

2. Literature review of scientific problem

Conceptual approaches to determining the essence, role, components and forms of economic security presented in scientific works of Adam Smith (Smit, 1776), D. Ricardo (Ricardo, 1817), T. Malthus (Malthus, 1820), D.-S. Mill (Mill, 1848), J. M. Keynes (Keynes, 1936), V. Pareto (Pareto, 1906), E. de Soto (Soto, 1986) and others. Such foreign and domestic scholars as V. Cable [1], P. Marsh [2], A. Baranovsky [3], D. Burkaltseva [4], O. Vlasyuk [5], A. Hal'chyn's'kyi, V. Geyets [6], B. Gubsky, M. Yermoshenko, J. Zhalilo, V. Mar-

tyniuk [7], V. Muntiyan, A. Novikov, V. Predborsky [8], A. Sukhorukov [9], and many others made significant contribution to the study of problems of economic security in terms of a considerable number of internal and external threats.

3. The purpose and objectives of the study

The purpose of the article is to highlight and substantiate the efficiency of introducing a mechanism preventing threats to the economic security of the state, providing for the introduction of tactical measures of a preventive nature under improvement of economic security.

To achieve the research objectives the following tasks have been formulated and solved:

- determine the level of economic security of Ukraine;
- make predicting the spread and impact of systemic threats to the development of the national economy in the medium term by external and internal factors;
- to conduct modeling process of emergence, spread and impact of threats to economic security level of the national economy;
- to offer organizational and economic mechanism preventing threats to the economic security of the national economy.

The object of research is the process of detection and assessment of their impact on the level of economic security of the national economy.

4. Conceptual approach to economic security of Ukraine-based mechanism against threats

The presence and influence of threats on the economic security of Ukraine is reflected in reduction of its

competitiveness and a critical situation of the real sector of the national economy.

Using methodological recommendations for the calculation of level of Ukraine’s economic security approved by the Ministry of Economic Development and Trade of Ukraine 29.10.2013, № 1277 [10], the calculation of the integral index of economic security of Ukraine, including its individual components is performed.

According to the previous calculations, integral index of economic security of Ukraine in 2014 decreased by 1.7 percentage points in comparison with the level of 2013 and amounted to 45.9 % of optimal value (Fig. 1). The largest drop of integral index of Ukraine’s economic security was registered in 2009 as a result of negative influence of the global financial crisis – a drop of 4.5 percentage points in comparison with maximum pre-crisis in 2007.

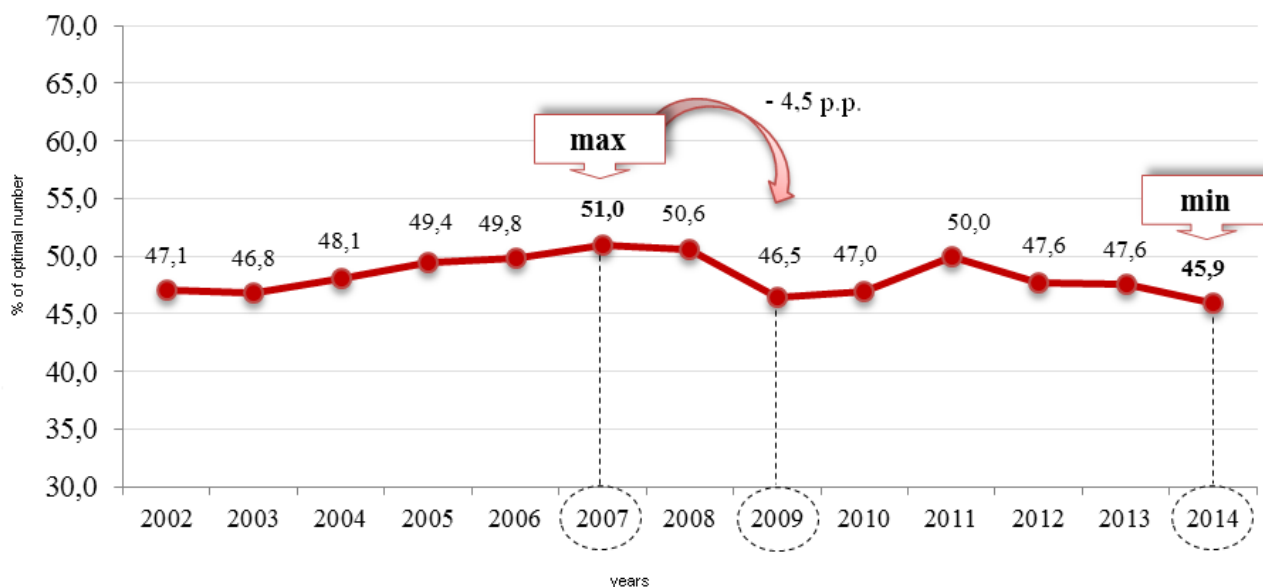


Fig. 1. Dynamics of the integral index of economic security of Ukraine in the 2002–2014.

Source: built on authors’ calculations

Values of weighted average of sub-indexes components of Ukraine’s economic security based on assessment of actual values of over 130 indicators of economic security are calculated in the study. Identification of threats to economic security of the national economy by separate areas: macroeconomic, industrial, investment and innovation, finance, energy, foreign trade, social, demographic and food is performed [11]. A considerable

number of the existing threats to the economic security of Ukraine caused by systemic imbalances in the real sector of the national economy, as evidenced by the systematic deviation of actual values of the main indicators of investment and innovation, energy, financial, macroeconomic and industrial components of the economic security of Ukraine, and therefore sub-indexes of this areas are or near to the critical zone (Fig. 2).

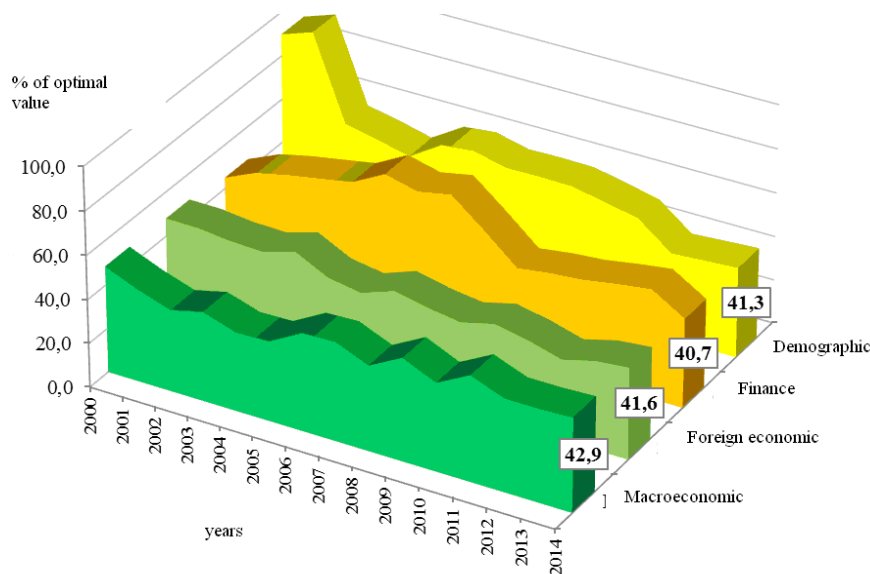


Fig. 2. Dynamics of sub-indexes of Ukraine’s economic security, whose values in 2014 are on the verge of critical state.

Source: built on authors calculations

According to the results of integrated assessment of indicators of actual values of economic security of Ukraine a critical vulnerability of the national economy to a number of external and internal challenges is revealed, in connection with the reluctance to confront modern macroeconomic deformations and multi-year deepening of crisis as a result of inconsistency of state economic policy of previous periods and the lack of effective reform of the national economy directed at stimulating modernization shifts and improving macroeconomic balances.

In the context of the situation in Ukraine's economy under pressure from both economic and non-economic factors critical increase of threats to the economic security of the national economy takes place, particularly in relation to additional, fundamentally new challenges for Ukraine [12]. The scale of economic threats requires a primary solution to the problem of ensuring the economic security at the national level. Neglect of the economic security can lead to disastrous consequences: the decline of the economy and undermining support system of the nation, followed by the loss of sovereignty.

Unfortunately, the institutional reforms undertaken as a part of the transformation period are characterized by inconsistent and fragmented implementation, resulting in a lack of a strategic approach to the development of the national economy. This situation, especially in terms of political and economic instability is inadmissible and implementation of public policy is weak to internal and external challenges and threats to the economic security of Ukraine [13].

Ensuring economic security of the national economy based on situational respond to threats that have already arisen involves their elimination and neutralization of negative influence on them. However, in terms of a significant number of challenges, risks and threats, such an approach is inefficient, and this raises necessity to prevent threats to economic security of the national economy by creating a set of measures of a preventive nature.

According to the authors vision, preventing threats to the economic security of the national economy is the process of implementation of measures aimed at countering the dissemination of threats to prevent their negative influence on the national economy by the public authorities and other entities of the economic security.

According to this conceptual approach, ensuring the economic security of the national economy takes place within the strategy of economic security of the state and involves the formation and implementation of measures for prevention of potential threats aimed at resolving the contradictions that arise in the process of implementation of national economic interests. In achieving satisfactory level of economic security of the national economy by such a way, further measures of economic policy in the framework of the tactical mechanism to strengthen the economic security of the national economy aimed at supporting its proper level and its further improvement are conducted.

As opposed to the proposed approach to the economic security of the national economy, the concepts of "security" and "strengthening" of economic security are often identified in Ukraine, indicating a lack of theoretical and methodological foundations of economic security of the

state and complicating the formation of administrative decisions and practical recommendations for the ensuring of the economic security of the national economy.

At the same time, the so-called "passive" ensuring of economic security of the state used in Ukraine. It based on the method of respond to challenges, risks and threats in case of deviation of indicators of economic security safe levels from the actual values, indicating a situational response that enables to eliminate threats that have already arisen and minimize their negative influence on the system of economic security of the state.

Using this approach to the economic security of Ukraine influenced by a large number of internal and external risks and threats is one of the causes of deepening systemic economic crisis in the state and functioning of the national economy only through considerable inertia. Therefore, the formation of a qualitatively new approach to economic security of Ukraine is particularly relevant, and as a result, organizational and economic mechanism of preventing threats to the economic security of the national economy at the state level is developed.

Operational leveling threats and the principle of precaution provides for early detection of threats using internal and external information environment of economic security of the national economy, their premature prevention through economic, organizational, legal, administrative and institutional levers, using multiple forecasting scenarios of providing the economic security.

The proposed mechanism includes a block of analytical economic security of the national economy, which is intended for continuous data collection, calculation of the current level of economic security of the national economy, the evaluation of the identified trends, identification and modeling of threats, assessing their influence on the level of economic security of the national economy and forecasting possible consequences for economic system of the state.

The functions of state regulation of preventing threats are entrusted to Department of Economic Strategy and Macroeconomic Forecasting of Ministry of Economic Development and Trade of Ukraine, including organizational and methodological (implementation of modern information technology to meet the needs of management, improving the methodology of information and analytical management etc.), [14] control (to ensure likelihood, relevance and timeliness of statistical information, organization of monitoring according to the needs of management), analytical (assessment of economic security, evaluating the efficiency and competitiveness of the national economy and its individual sectors regarding international standards etc.), planning and forecasting (modeling threats to the economic security of the national economy, formation state program-forecast of economic and social development of Ukraine for the short, medium and long term prospect, etc.) [15].

Tools of the state regulation of preventing threats to the economic security of the national economy include economic (tax rates and benefits, transfers, direct budgetary investments, grants, concessional loans, the discount rate, rates, foreign exchange restrictions, etc.), organizational (government support, counseling, support the staffing, information support, etc.), institutional (budgetary

funds, technology parks, business incubators, think tanks, etc.), administrative (registration, licensing, quotas, contests, tenders, etc.) and regulatory (decisions, orders, regulations, policies, concepts, plans, forecasts, programs, etc.) methods and instruments.

Ministry of Economic Development and Trade of Ukraine is the body that coordinates the activities of institutions within its powers and implements administrative decisions of preventing threats. These institutions include line ministries and other executive bodies, the National Bank of Ukraine and others [16]. However, the formation of priority directions of economic security of the national economy based on revised data of the block of analytical support using described above tools, making appropriate management decisions, monitoring and control of the achieved results are in the exclusive competence of the Ministry of Economic Development and Trade of Ukraine.

5. The main results of the study

Organizational-economic mechanism of preventing threats to the economic security of the national econ-

omy allows performing operational correction of the state economic policy based on the data collection and analysis of its performance based on the feedback effect received from civil society, which is particularly relevant in the integration of the national economy in the world economy.

The present stage of development of national economy identified real system and additionally acquired threats with a maximum level of influence on the economic security of Ukraine with the subsequent transition to proactive economic security based on anticipatory management need priority respond.

Using such conceptual approach to the economic security of Ukraine has several advantages, in particular the possibility to prevent the conversion of potential threats into real ones by means of early detection at the stage of their formation and to minimize their negative influence on the system of economic security of the national economy. Graphic interpretation of dependence on the level of threats' influence on the effectiveness of the mechanism of ensuring economic security is represented in Fig. 3.

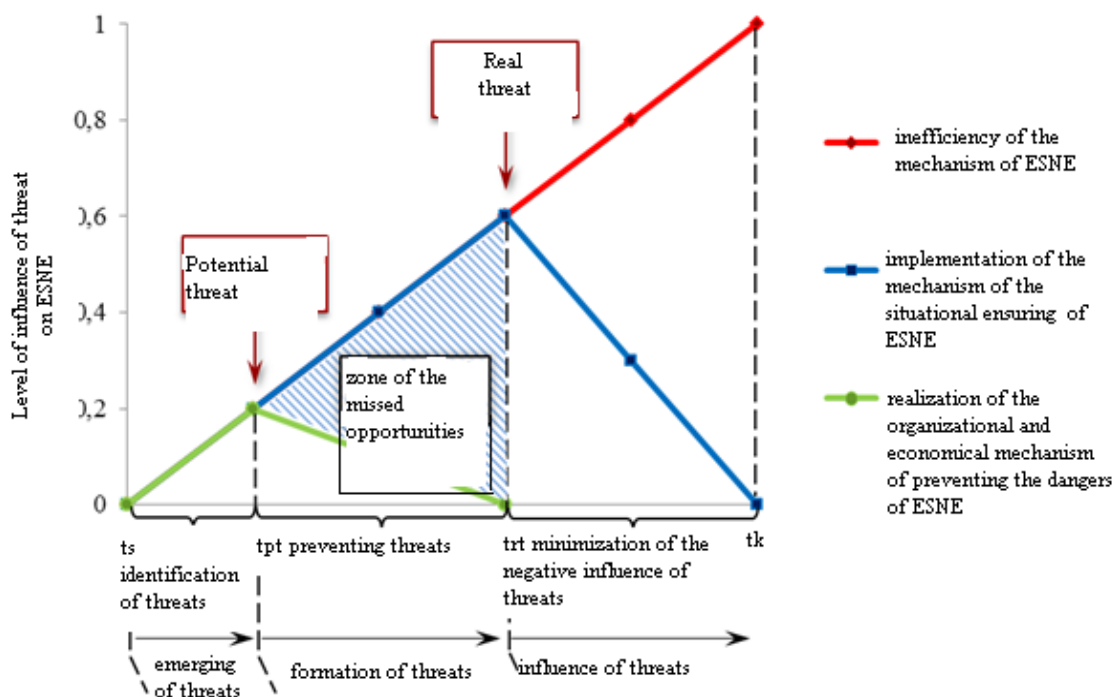


Fig. 3. Graphical interpretation of dependence on the level of influence of threats on the effectiveness of the mechanism of economic security of the national economy: t_s – starting point of factors and conditions of threat; t_{ps} – point of potential threat; t_{rt} – point of real threat; t_k – point of structural changes in economic security under the influence of a real threat in case of ineffectiveness of the mechanism of economic security or elimination of the threat.

Source: development of the authors

As shown in fig. 3, in the case of inefficiency of ensuring economic security mechanism of the national economy over a period a potential threat arises, which in the absence of countermeasures for the period of time ($t_s - t_{rt}$) is forming and becoming a real threat. Formed real threat directly produces a destructive impact on the system of economic security of the national economy, leading to the loss of its stability and possible structural changes in it, and the level of negative impact of the threat in this case is estimated as the maximum (0.6–1).

In the case of realization of situational mechanism of ensuring the economic security of the state, which is available at the present stage in Ukraine, the implementation of public policy measures begins during the emergence of the destructive influence of real threats. That is the period of occurrence and formation of threats ($TP - t_{rt}$) by such approach can be considered lost, that leads to maximum impact of threats, as in the case of inefficiency of ensuring economic security mechanism.

In applying the principles of preventive management, implementation of public policy measures begins

at the initial stage of occurrence of threats by identifying factors and conditions that are sources of potential threats. This allows to avert threats during their formation ($t_s - t_{rz}$) and to prevent conversion of potential threats into real one, as a result their level of influence on the system of economic security is estimated as minimal (0–0.2).

The main disadvantage of situational ensuring compared to the preventive one is the presence of zones of missed opportunities during the formation of threats ($t_s - t_{rz}$) in connection with the absence of timely measures on elimination of the threat, rather than the destructive consequences of it.

Thus, the scientifically grounded necessity of implementing organizational-economic mechanism of threats preventing to the economic security of the national economy by a preventive approach to ensure economic security at the national level and the formation of the priority areas key measures of ensuring economic security based on prevention of threats.

6. Conclusions

Prevention of threats to economic security based on preventive management with using methods of scenario modeling gives the opportunity to choose the best and most effective option among alternative ones by forecasting of possible consequences the result of each is aimed to prevent the destructive impact of potential threats to the system of economic security. The introduction of a strategic monitoring, situational modeling and forecasting during the development of priority areas of economic policy in the framework of an integrated procedure of grounding and making strategic decisions will allow to form the fundamental principles of increasing economic security level of Ukraine on the basis of preventive management.

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Дата надходження рукопису 17.06.2016

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УДК 519.85

DOI: 10.15587/2313-8416.2016.74350

USING THE METHOD OF IDEAL POINT TO SOLVE DUAL-OBJECTIVE PROBLEM FOR PRODUCTION SCHEDULING

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In practice, there are often problems, which must simultaneously optimize several criterias. This so-called multi-objective optimization problem. In the article we consider the use of the method ideal point to solve the two-objective optimization problem of production planning. The process of finding solution to the problem consists of a series of steps where using simplex method, we find the ideal point. After that for solving a scalar problems, we use the method of Lagrange multipliers

Keywords: *method of ideal point, dual-objective problem, scalarized problem, simplex process, Lagrange method of multipliers*

На практиці часто зустрічаються задачі, в яких треба одночасно оптимізувати декілька критеріїв. Це задачі багатокритеріальної оптимізації. Ми застосовуємо методу ідеальної точки для розв'язання дво-критеріальної задачі планування виробництва. Розв'язок задачі складається з двох кроків, де за допомогою симплексного методу знаходимо ідеальну точку, а для розв'язування скаляризованої задачі, використовуємо метод множників Лагранжа

Ключові слова: *метод ідеальної точки, двокритеріальна задача, скаляризована задача, метод множників Лагранжа*

1. Introduction

When solving various problems in economics, social sphere, information technologies, etc. the decision often needs to be made under certainty, uncertainty and conflict circumstances. There exists a set of methods to make decisions under such circumstances. In particular, under circumstances of uncertainty, in order to make a decision when solving multi-objective problems, methods of ideal point, successive approximation, additional constraints etc., are commonly used.

Let us review the use of ideal point method [1–3] to solve dual-objective problem of production schedul-

ing, where profit and demand for product being manufactured is taken as a criterion of optimality.

Suppose, n is the number of product items the enterprise may produce; m is the number of different resources used in manufacturing of products; a_{ij} is the number of units of the i -th resource used to manufacture one j -th unit of the product; b_i is the number of units of the i -th resource that may be used at the enterprise; p_j is the profit from the manufacture of product unit of the j -th type; r_j is the demand for the products of the j -th type; x_j is product manufacture schedule of the j -th type (thought-for values).