

The Concept of Assessing the Level of the Enterprise Economic Security

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Abstract

Several problems can be identified in assessing the economic security of organizations. Most of the developed techniques in this area involve the assessment of the financial component of economic security using methods for assessing the probability of the bankruptcy of the enterprise. At the same time, there are no unambiguously recommended evaluation methods; often enterprises are limited to any one complex methodology. Any evaluation of the financial component of the security is reduced to the cost-benefit analysis and evaluation of balance sheet liquidity and the financial stability of the organization, without the formation of an integral indicator. This approach does not consider the nature of internal processes and assesses the final impact of these “processes” on the indicators of financial statements (based on which the assessment of the financial component of economic security is formed). Also, one of the problems of assessing economic security using mathematical models is the complexity of mastering these models and the lack of the programs for performing calculations. It should be noted that it is a characteristic of the largest number of studied methods that usually assess the current state of the enterprise, the complex methodology does not consider threats, the maximum that can be considered is a possible prevented damage. Nevertheless, working with threats in the assessment system allows us to predict the possible negative impact on the state of economic security. And timely prevent these situations or “take the risk”, since it is advisable to assess threats through risk indicators. Assessment of economic security is as important as any other economic analytical information needed for the timely decision-making and the formation of proactive measures.

Key-words: Threats, Analysis of Economic Security, Assessment Tools, Assessment Methods, Thresholds, Complex Indicator.

1. Introduction

The relevance of the chosen topic lies in the insufficient study of the problem of evaluation of economic security from the perspective of an integrated approach to the problem, unfortunately, there

is no single approach and methods for assessment of the economic security from the point of view of the processes in the company (not just financially), and in consideration of the aggregate effect of the threats and risks of external influence. Conducting an economic security assessment takes time, and also there are many different methodologies to assessment., Enterprises need an accessible tool for assessing economic security to form an idea of the level of the economic security, which includes not only the assessment methodology, but also a business application that allows automating the assessment process and reducing the complexity of calculations. This determines the feasibility of developing a topic.

The main definitions and goals in the field of the economic security are defined by Federal Law No. 390-FZ of 28.12.2010 (as amended on 05.10.2015) “On Security” (State Duma of the Federal Assembly of the Russian Federation, 2010), Presidential Decree No. 208 of May 13, 2017 “On the Strategy of Economic Security of the Russian Federation for the period up to 2030” (President of the Russian Federation, 2017). The research questions of economic security are considered in the economic literature, the study of these issues was dealt with by such scientists as: Senchagov V.K. (2015), Kuklin A.A. and Tatarkin A.I. (2012), Kormishkina L.A., Kormishkin E.D. and Ilyakova I.E. (2017), Belovitskii K.B. and Nikolaev V.G. (2017), Koshkina I.A. (2005). In the work takes into account the results of studies of crisis on enterprises such scientists as Asaul A.N., Knyaz I.P. and Korotaeva Y.V. (2007), Vasilkov Yu. V. (2017), Kopytko M.I. (2014), questions threats highlighted in the works Doroshenko M.V., Isupova O.A. (2018), Lugovkina O.A. (2015).

The purpose and objectives of the study: to study the factors that affect economic security, including machine-building enterprises, and to develop tools for assessing the economic security of machine-building enterprises. In the work, the economic security of the enterprise is the most effective use of resources, scientific, technical, technological, production and human resources of the enterprise to prevent external and internal threats, ensure the stable functioning and ability of the enterprise to reproduce in the future and protect the organization against economic crimes (Koshkina, 2005).

Scientific novelty: the novelty of the presented work consists in a comprehensive study of the tools for assessing an economic security. The elements of scientific novelty in this work are a group of indicators for assessing the economic security taking into account risk factors and threats is proposed; a methodology for assessing economic security taking into account risk and threat indicators is developed and tested.

Theoretical and practical significance: data on the definition of the concept of “economic security of the enterprise” and methods for assessing economic security are analyzed and

summarized; a program for assessing economic security is developed, and the possibility of using the results obtained to conduct the most complete analysis of economic security at the enterprise.

2. Methods

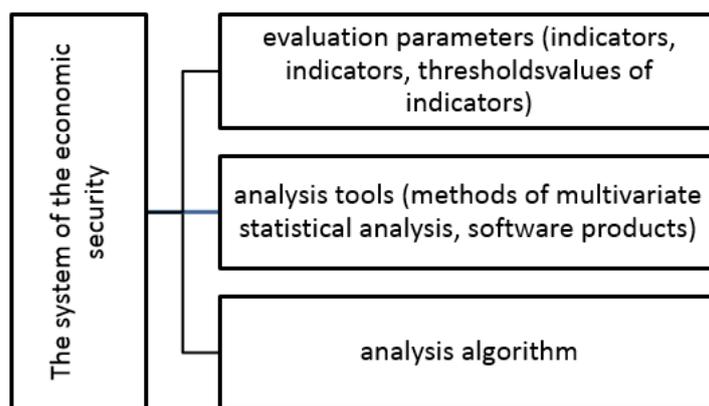
The sources of information when writing the article were scientific materials on the research topic, periodical literature, as well as data from rating and analytical agencies. The work also uses reporting and expert-analytical data, statistical and accounting data of enterprises. Methodological basis – the theory of economic security, the theory of economic analysis, methods of risk analysis and bankruptcy.

3. Results and Discussion

Slowing growth in the global economy, currency volatility, border closures, measures taken by the state in the context of a pandemic, sanctions against the state have an impact on the country, and on the economic situation of enterprises (Real'noye vremya, 2020; Federal State Statistic Service, n.d.; Tkachev, 2020). The assessment of the economic security of an enterprise is an important information component of the enterprise management process that affects the development of management decisions. In the developed model, the economic security assessment will take into account not only the characteristics of processes, but also the characteristics of threats, as well as trends in changes in processes at the enterprise.

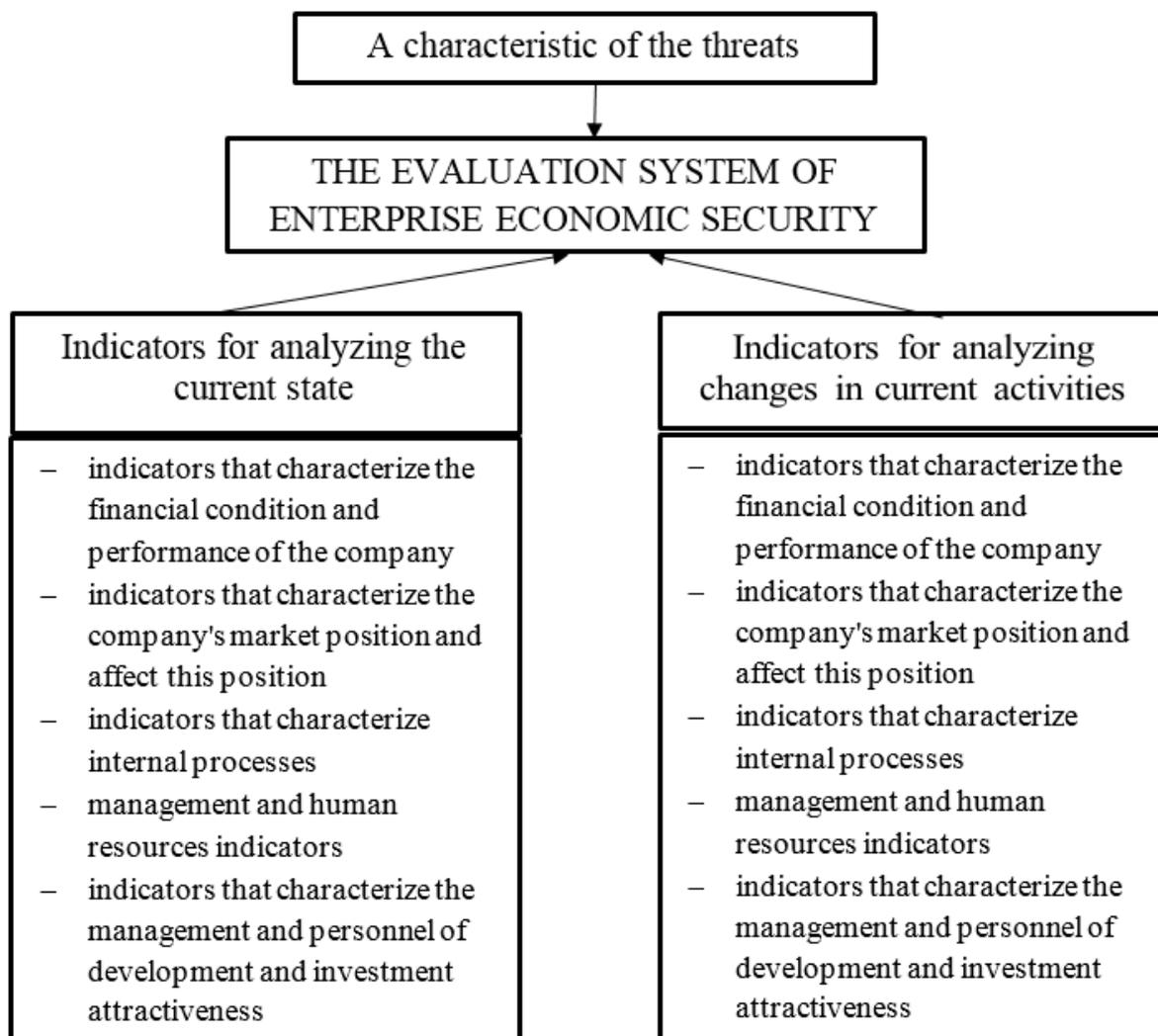
The analysis of the economic security of the company, as noted earlier, should consider various characteristics of the activity, financial, production, and personnel management characteristics. Fig. 1 shows the components of the economic security analysis system.

Figure 1- Elements of the Enterprise Economic Security Analysis System



The modified system of indicators for assessing the economic security indicators including the analysis of indicators of the current state of the system, changes the system state and risk assessment system in contrast to existing methods. The structure of the analysis indicators is shown in Fig. 2.

Figure 2- Structure of Economic Security Analysis Indicators



The assessment of the enterprise economic security according to the indicators should determine level of the economic security of the enterprise: normal, pre-crisis (with deviations from normal), crisis. Threats to the economic security of an enterprise are also important to identify, because the stronger the impact, the stronger it is, this can bring the enterprise closer to a crisis, even with good stable performance indicators.

Groups of evaluation indicators:

1. Indicators that characterize the financial condition and performance of the company.
2. Indicators that characterize the company's market position and affect this position.
3. Indicators that characterize internal processes.
4. Management and human resources indicators
5. Indicators that characterize the management and personnel of development and investment attractiveness
6. Threat characteristics.

The assessment of an organization's economic security will be influenced by the characteristics of the economic security by subgroup for each group, the characteristics of the economic security in general for all groups, and the characteristics of threats.

To quantify the economic security of an enterprise, it is proposed to use a generalized indicator of economic security – this is an indicator that characterizes the state of the indicators, which allows the vector task of the evaluation to replace the scalar comparability of estimates of exceeding the threshold.

The complex characteristics of the enterprise economic security, the composite index (CI) is calculated by the formula (1) in the evaluation of the used method of sections adapted to the solution of problems of diagnostics of economic security of enterprise

$$CI = (0,5 * Pi_1 + Pi_2 + \dots + Pi_{n-1} + 0,5 * Pi_n) \quad (1)$$

private index

where Pi - a particular index of the economic security indicator in the corresponding subgroup, which is calculated: $Pi = \frac{Y}{Y_{th}}$,

Y – the value of the indicator (indicator),

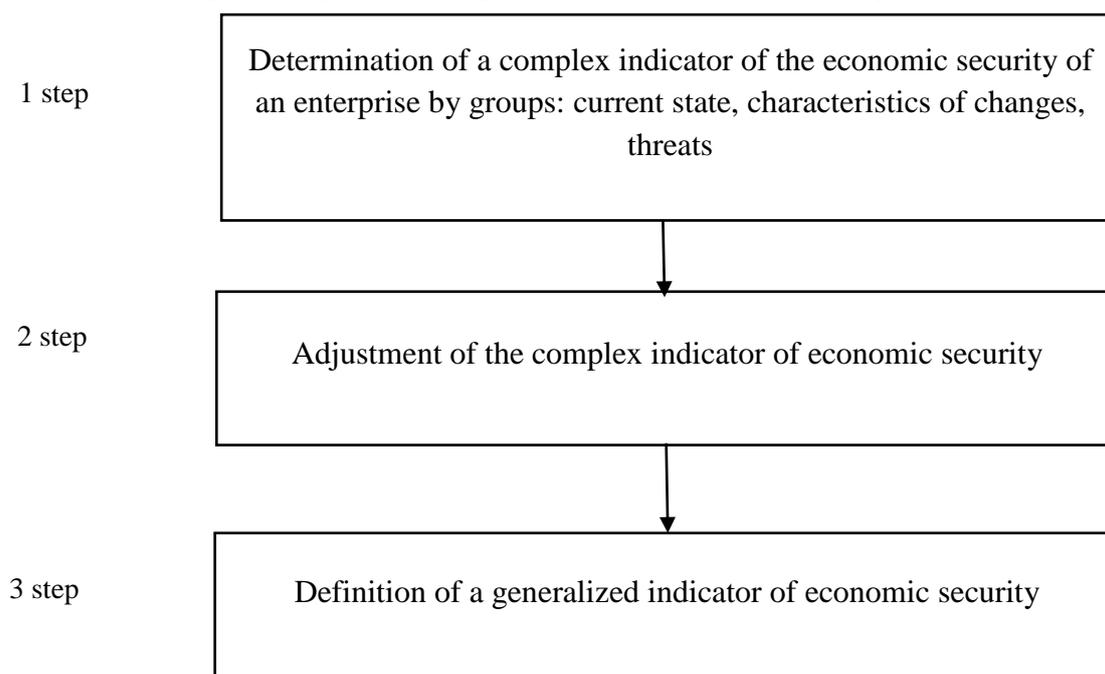
Y_{th} – threshold value of the indicator

The state of economic security of the enterprise will be assessed in accordance with the following assumptions:

$$CI = \begin{cases} \text{normal } (S_1), & \text{if } CI \geq 0,99 \\ \text{pre - crisis } (S_0), & \text{if } 0,7 \leq CI < 0,99 \\ \text{crisis } (S_2), & \text{if } CI < 0,7 \end{cases}$$

The assumptions in the scale are based on the method of crisis recognition Asaul A. N. (2007). In general, the stages of assessing the state of economic security of the enterprise are shown in Fig. 3.

Figure 3- Steps of Assessing the Economic Security of the Enterprise



At the first step, the definition of a complex indicator is proposed as a mathematical tool, it is proposed to use the method of profiles and the method of analyzing hierarchies by Saati. Systems of indicators of the organizations economic security on the basis of which a complex indicator will be determined, it is necessary to form taking into account the specifics of the enterprise's activities, as a rule, in this situation, an expert group can be organized, which should include the heads of the main activities of decision-makers.

A comprehensive indicator of the economic security will be calculated for each group separately. At the second stage, the Complex Group Indicator of Economic Security is adjusted. At the third stage, the generalizing indicator of the economic security of the enterprise (GI) is determined. The final stage of the analysis is to identify measures to prevent a possible crisis, to bring the company out of a crisis state, and to elimination of problem areas in the functioning system.

The assessment of the economic security is carried out according to 5 groups of indicators. The general CI and intermediate CI by groups are defined. The assessment of the economic security situation at the enterprise is given considering the stage of development, CI for the most significant groups at this stage of development.

A comprehensive assessment of economic security is carried out in the following areas: current indicators, indicators of changes in indicators; indicators that characterize threats. Based on

the results obtained and the characteristics of the situations calculates an amount recommended values adopted in accordance with the data of the dissertation research of Koshkina I. A. (2005) the composite index is calculated as the sum of the scores of the combinations of complex index in the directions of current indicators, change indicators; indicators characterizing threats.

$$GIES = Evaluation_{current\ state,changes} + Evaluation_{current\ state,threats} + Evaluation_{changes,threats}$$

The characteristics of the combinations are presented in the score distribution matrices (Tables 1, 2, 3).

Table 1- The matrix of the Distribution of Scores for Indicator Current state - Characteristics of Changes

Characteristics of changes	normal	0	3,5	5
	pre-crisis	0	2,5	4
	crisis	0	1	3
		crisis	pre-crisis	normal
		Current state		

Table 2- The Matrix of the Distribution of Scores for Indicator Current State – Threats

Threats	normal	0	3,5	5
	pre-crisis	0	2,5	4
	crisis	0	1	3
		crisis	pre-crisis	normal
		Current state		

Table 3- The Matrix of the Distribution of Scores for Indicator Characteristics of Changes – Threats

Threats	normal	2	3	4
	pre-crisis	1	2,5	3,5
	crisis	0	1,5	2
		crisis	pre-crisis	normal
		Current state		

The overall assessment of the economic security of the enterprise will be carried out on a 14-point scale, taking into account the combination of components (Table 4).

Table 4- Assessment of the economic security of the enterprise

Characteristics of current state	Characteristics of changes	Characteristic of threats	GIES	Characteristics of the economic security status
normal	normal	normal	14	normal
normal	normal	pre-crisis	12,5	the condition is normal with a tendency to worsen
normal	pre-crisis	normal	11,5	the condition is normal with a tendency to worsen
normal	pre-crisis	pre-crisis	9,5	pre-crisis condition
pre-crisis	normal	normal	11	the condition is pre-crisis with a tendency to improve
normal	normal	crisis	10	the condition is pre-crisis with a tendency to improve
normal	crisis	normal	10	the condition is pre-crisis with a tendency to worsen
normal	pre-crisis	pre-crisis	9,5	pre-crisis condition
pre-crisis	normal	pre-crisis	9,5	the condition is pre-crisis with a tendency to improve
pre-crisis	pre-crisis	normal	9	the condition is pre-crisis with a tendency to worsen
normal	pre-crisis	crisis	8,5	pre-crisis condition
normal	crisis	pre-crisis	8	pre-crisis condition
pre-crisis	pre-crisis	pre-crisis	7,5	pre-crisis condition
pre-crisis	normal	crisis	6,5	crisis
pre-crisis	crisis	normal	6,5	crisis
normal	crisis	crisis	6	crisis
pre-crisis	pre-crisis	crisis	5	crisis
pre-crisis	crisis	pre-crisis	4,5	crisis
pre-crisis	crisis	crisis	2	crisis
crisis	normal	normal	4	crisis with the possibility of improvement
crisis	normal	pre-crisis	3,5	crisis
crisis	pre-crisis	normal	3	crisis
crisis	pre-crisis	pre-crisis	2,5	crisis
crisis	normal	crisis	2	crisis
crisis	crisis	normal	2	crisis
crisis	pre-crisis	crisis	1,5	crisis
crisis	crisis	pre-crisis	1	crisis
crisis	crisis	crisis	0	crisis

The development of a system of indicators is important. The main difficulty is determining the threshold values for each indicator. The system of indicators for assessing the economic security of an enterprise should take into account the industry orientation and specifics.

4. Conclusion

In the estimation of the economic security organizations exist such problems as focusing exclusively on the financial component of economic security with the use of methodologies for assessing the probability of bankruptcy, without regard to the internal processes of the organization and assess the impact of threats to economic security threat assessment only considered the

assessment of the possible prevented damage. Also, one of the problems of assessing economic security using mathematical models is the difficulty of mastering these models and the lack of programs for conducting calculations.

Although one of the tasks of assessing economic security is to decide to work with risks and situations that reduce the level of economic security. It is also necessary to assess the joint manifestation of factors in the assessment. The paper proposes an algorithm for analysis, groups of indicators and characteristics of the values of the generalized assessment of economic security. To optimize the calculations, we created a business application that allows us to assess the state of economic security of the enterprise based on the developed methodology.

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