

Balancing Sales and Safety: A Methodological Approach to Economic Security Analysis of Enterprises

¹V.L. Pozdeev, ¹M.A. Azarskaja, ²E.A. Astrakhanceva and ²O.S. Bezvidnaja

¹Volga State University of Technology, 424000 Yoshkar-Ola, Russia

²Institute of Management, Economics and Finance, Kazan Federal University, 420008 Kazan, Russia

Abstract: Economic security analysis requires an evaluation of potential threats to the economic activity of an enterprise. These threats may be both internal and external. They are determined by various developmental factors such as notably, political conditions, changes in product supply and demand, the state of the capital market and the labor market as well as many others. Under the influence of these factors, the activity of any enterprise undergoes fluctuations, forming a trajectory of development. Such a trajectory provides a highly useful tool for analyzing an enterprise's activity from the perspective of its economic security. The study aims to introduce a methodological approach to economic security analysis of enterprises. The need for such methodological tools has only recently become the subject of academic discussion. The approach proposed in the study is twofold. First, it involves measuring the amplitude of the trajectory of the enterprise's development with respect to a safety corridor determined by acceptable rates of sales growth. Second, it requires analyzing indicators that characterize the environment and the enterprise's activity in order to determine those that go beyond the safety corridor. The study describes two different analytic methods to address the difference in stages of growth and decline in an enterprise's business activity. This dual approach results in data that identifies upper and lower limits of the safety corridor. This information will allow the company's management to focus its attention on eliminating factors that cause indicators to go beyond the limits of the safety corridor, an approach that will result in safer and more stable development.

Key words: Security, analysis, development trajectory, safety corridor, approach, management

INTRODUCTION

An unstable environment determines the oscillatory processes of economic activity which necessitates constant adaptation to the new conditions of the enterprise. Not all businesses are able to develop mechanisms of adaptation. Many of them face financial problems and become insolvent.

The activity of any enterprise is heavily dependent on external factors. This is due not only to differences in political, economic, social and other conditions in the international environment but also to the regional differences within the Russian Federation where many regions are subsidized. Enterprises feel comfortable in the conditions of economic growth in the country or region when resources of production and above all financial resources become openly accessible. However, over the past 15 years, the economy of Russia experienced three crises which created difficulties for the operation of enterprises. Crises are a source of massive bankruptcies.

The task of resolving the problem of enterprises in crisis fell to crisis managers. The institute of crisis

management began developing in the Russian Federation since 1992 with the adoption of the Federal Law on insolvency (bankruptcy) of enterprises. Since then, more than 20 thousand people became licensed professionals in crisis management. However, the demand for arbitration managers is several times higher. This means that not arbitration managers but specialists of enterprises must independently solve problems of predicting and managing crisis situations. In recent years, this has been linked with ensuring the economic security of companies.

Theoretical foundations: The economic activity of any enterprise undergoes fluctuations manifested as cycles of ups and downs. On a macroeconomic level, fluctuation processes are seen as a state of equilibrium and deviations from it. Beginning with the 19th century, scientists sought to explain the reasons that economies went out of balance. As a result, theories of the economic cycle were formed. However, the lack of synthesis between these theories led to a lack of theoretical justification of fluctuations processes in economic practice.

“The modern view is that we have no acceptable economic theory of the basic cause of business cycles” (Hammond, 1984). This means that questions of theory and practice, related to the study of cyclical fluctuations in the economy have not been answered yet. The modern theory of cycles is interpreted as a theory of stochastic impulses (shocks) which cause constant random deviations from the equilibrium (Kydland and Prescott, 1982).

At a micro-economic level, fluctuation processes are mostly linked with the concept of “sustainability” which has a pronounced emphasis on the notion of a system (Glansdorff and Prigogine, 1973; Hammond, 1984). Stability is here characterized by the ability of the system to return to equilibrium after the termination of the disturbance. Stability is characteristic of economic systems, among others. If, in the course of its business activities, a company deviated from equilibrium, then it has a lot of economic instruments (financial resources, credits, restructuring, marketing, etc.) to remedy the situation.

Does not the concept of security simply replace the concept of stability? An unstable system cannot be safe; however, stability ensures safety. How, then can levels of stability and those of security be separated?

The concept of economic security can be referred to a variety of objects of economic development: from the national economy level to the enterprise level. The prominent Russian economists have expressed different views, stating that the state’s economic security is manifested: in the dynamic development under the independent economic policy (Abalkin, 1994) the appropriate level of the national economy’s competitiveness in the global competition conditions (Glazyev, 1997) in the aggregate characteristics of the production subsystem status providing the opportunity to achieve the objectives of the entire security system (Tambovtsev, 1995) national economy protectability from external and internal threats (Gordienko, 2012). All the opinions accord with the meaning of the economic security of the state, however, the latter approach arises from the provisions of the RF law on security and therefore is more reasonable. At the same time, the crisis state of the Russian economy creates conditions for the external and internal threats and protection of the national economy from them is becoming a paramount goal for economic management authorities.

Economic security is the basis of national security. Being a complex system economic security can be represented as separate elements. For instance, the

economic literature gives an account of such types of economic security as energy security (Voropai and Senderov, 2011) food security financial security Scientific and Technological Security (Mindeli, 2012), environmental safety (Atabiev, 1998). At different times, the focus is made on some form of security but at the moment, due to the sanctions against the Russian economy, the main threat lies is seen in energy, financial, scientific and technological security.

The problems of economic security arise not only at the state’s level but also in each enterprise, taking into account the unstable external environment. When speaking about the economic security of the enterprise the scientists are unanimous in their opinion. “The state of the most efficient corporate resources use to prevent threats and to ensure the company’s stable operation currently and in the future”, “invulnerability and independence of its economic interests with regard to the possible external and internal threats and impacts” (Nechayev and Mikhailushkin, 2011) “the survival” and development ability in the conditions of internal and external threats” (Zabrodsky and Kapustin, 1999) “the state of protectability of its vital interests from the real and potential risks or economic threats” (Shlikov, 1999), etc. are considered to be safe for the enterprise.

The unanimity of opinion of defining the company’s economic security is seen in the fact that the researchers associate security with threats. The safety of the company’s activities is linked to the ability to defend itself against the threats which influences survival and sustainable development in the challenging conditions of external and internal environment. Therefore, the decisions on activities stabilization must be based on the account of economic conditions fluctuations, objective and subjective risk factors and threats. It should be noted that the company’s economic security also consists of separate elements among which being resource, product and financial security each to be subject to the independent evaluation and collectively they are to produce a comprehensive evaluation of the enterprise’s economic security.

Economic security: Economic security needs to be considered within the limits of sustainability. The higher the fluctuations in economic activity, the more complex the tasks that lie before the management of the company. That is why, the amplitude of fluctuations must be permanently in sight of the analyst because it is precisely the smoothing of the amplitude that determines the stable and safe nature of the enterprise. Therefore, to ensure

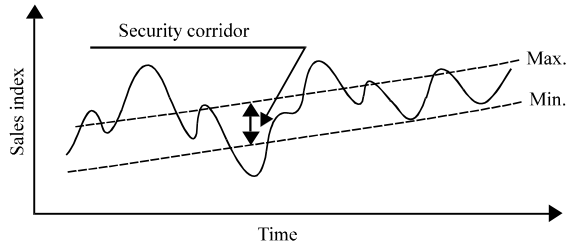


Fig. 1: The trajectory of development and the corridor of economic security

economic security it is necessary, first of all to learn to control the amplitude of fluctuations of business activity, keeping it within certain limits.

Thus, economic security is the ability of the enterprise to pursue its development within the established boundaries (safety corridor) of the key parameters (indicators) of economic activity. This security corridor sets the limits of minimum and maximum values. From this perspective, the corridor of economic security of the enterprise can be graphically represented as follows Fig. 1.

In order to meet the requirements of economic security, the fluctuations of business activity of the enterprise must not extend beyond the security corridor as shown in Fig. 1.

MATERIALS AND METHODS

We cannot say that the enterprise's economic security analysis and evaluation toolkit has been fully developed. More often, the popular methods to be in some way adapted to evaluate the economic security are used. The methods applied are:

- Methods based on expertise assessments
- Statistical methods
- Mathematical methods
- Integrated assessment methods

Methods of expertise assessments are used to describe the quantitative and qualitative characteristics of the activity, taking into account the qualifications of the experts and their knowledge in the area of economic security (Primakin and Bolshakova, 2012). In the course of the survey and processing of expert's opinions the following problems are solved:

- Making up the SWOT-matrix indicating the company's strengths and weaknesses, market opportunities and threats while weaknesses can reflect internal threats market opportunities can represent external threats
- Forecasting possible outcomes
- Identification and arranging the economic security risks factors of the enterprise, evaluation of the likelihood of these risks, etc.

Application of statistical methods allows us with the required accuracy and reliability, to estimate the company's state of economic security in the following areas:

- Statistical assessment of the likelihood of risks and threats (Vishnyakov and Radayev, 2008)
- Analysis of determinant models, evaluating the enterprise's bankruptcy approaching (Patlasov and Sergienko, 2007)
- Forecasting road maps based on extrapolation (Kotova and Valeschuk, 2015) and other methods

The mathematical methods are used for resources optimization and for maximum approaching activities outcomes to the company's performance objective to be the necessary factor of its economic security.

The integrated evaluation methods combine a number of indicators of economic activity in a single integrated indicator, taking into account the weighing coefficients using a formula:

$$K = \sum_{i=1}^n b_i P_i$$

Where:

- b_i = Magnitude specific weight of the i th indicator
- P_i = The value of the i th indicator
- n = The number of indicators for evaluation of the enterprise's economic security

We believe that the integrated approach is to be used to analyze the economic security of the enterprise. In this case, the main purpose of the analysis of economic security is to obtain information on the acceptable values of economic activity and to determine the factors that are able to keep the development of enterprise within the specified limits of the security corridor. The process of analyzing the economic security of the enterprise is shown in Fig. 2.

The method of analysis presented in Fig. 2 allows for performing a comprehensive study and justifying the levels of safe development of the enterprise.

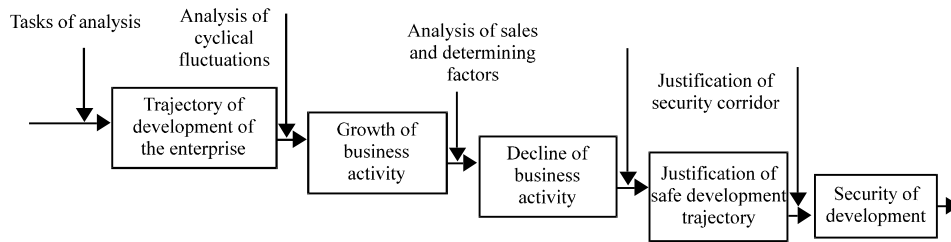


Fig. 2: Tasks and methodological features of the analysis of the economic security of the enterprise

RESULTS AND DISCUSSION

Analysis of cyclical fluctuations: The trajectory of development of the enterprise is determined by alternating periods of high and low sales. Since, it happens at certain intervals in order to determine the developmental trajectory it is necessary to analyze a dynamic series of indicators. There are four parameters in the dynamic series:

- A trend
- A cyclical component
- Seasonal component
- A random component

The study of the cycle component is related to a number of factors. The most important one is the length of the time series (number of observations) and the data comparability. When considering the cycle component, it is preferable to consider a full cycle of company's development. While processing the data, it is necessary to eliminate outliers and smooth the dynamic row using factor and regression analysis. The highlighted cyclical component of the time series will determine the duration of growth and decline in the path of the company's development as well as the amplitude of the cycle.

We note that our studies have shown the possibility of determining cyclical fluctuations in the activity of medium and large-scale enterprises. For small-scale businesses, fluctuations are random and cannot be described.

Analysis of sales at the growth stage: For an enterprise, the growth stage belongs to the phase of strengthening its position in the market. The enterprise is recognized by the clients which allows for sales increase. When analyzing the dynamics of enterprise development, it is important to understand the level of the marketing support of sales, associated with the assessment of commodity markets, the optimization of product variety, the justification of prices and the implementation of product sales. In addition, it is necessary to obtain

information on the correct choice of funding sources as well as on the evaluation of investment projects according to the criteria of profitability and risk.

Company growth is accompanied by the increase in the growth rate of sales of products. If an enterprise starts to chase excess profits, resulting in rapid growth, this will necessarily lead to a deep recession. For stability and security of the enterprise's activity, sales should rise gradually and slowly. At this stage, it is important to determine the beginning and the duration of the period of the policy of limited growth in order to avoid a sharp downturn.

Of course, the stage of growth is largely influenced by the external factors that are favorable to the development of the enterprise. However, the period of growth in sales is limited in time, due to the limited capacity of the market and investment resources. Because of this, it is necessary to pay attention to such factors as wear and tear of fixed assets, excessive accumulation of raw materials and finished goods in warehouses as well as debt obligations to creditors. These factors are harbingers of decline in production.

Analysis of sales at the stage of recession: During recession, a systemic decline in sales occurs. In other words, there comes the time when the efforts of the management do not even result in the sales stabilization. This stage is characterized by a loss of market share, high dependence on creditors and low financial results. The main task of the management is to estimate the break-even of activity and maintain the required level of financial strength. A period of decline significantly increases the uncertainty of the situation which justifies the risks of management decisions.

Risk analysis is carried out using expertise, analytical or statistical methods to assess the efforts of managers to reduce production costs, phase out unprofitable products, eliminate non-core assets and restructure enterprises and debt while maintaining the productivity of the enterprise. If these measures have created prerequisites for further growth, then this research was effective, the risks being minimal. If the company started to generate losses, the analysis should show what factors contributed to the riskiness of its activity.

Justification of the economic security corridor: The enterprise's being in the security zone allows us to determine the anticipated evaluations. When short-term forecasting is used, the more important trend is not the one of the indicator development but its dynamics in recent observational periods. Therefore, the more effective methods used for prognosis are adaptive ones (Mindeli, 2012) taking into account the data dynamic irregularity. The prognosis is based on the adaptive model being constantly corrected by the new data. This provides a means of reflecting the oscillatory processes in the development of the enterprise. Thus, the adaptive model is capable of responding quickly to the changing business environment by taking into account the forecast of the performance made at the previous step and the varied information value of the row levels. Let us assume that, the model is in the state which the current values of its coefficients have been determined for. This model serves to be a basis for forecasting. When the actual value becomes available the forecast error is estimated (the difference between the actual value and the one obtained according to the model). The forecast error through the feedback goes to the model and taken into account there according to the assumed procedure of transition from one state to another. As a result, the adjustment of parameters is made which provides better consistency of the model behavior with the row dynamics. Then the prognosis, evaluation is calculated for the next moment of time and the whole process is repeated again. This approach is helpful to find out whether the indicator being examined is within or beyond the security corridor. For a long-term prognosis the Foresight concept is to be used. The main tool for the prognosis is construction of multiple scenarios of enterprise development accompanied by simultaneous strategies and practical actions generation. The scenarios will not only provide information on the future development of the company within the security corridor but will also give an estimate of those scenarios implementation probabilities.

CONCLUSION

The approach presented in the study is especially, relevant in conditions of decline in productivity, since leaving the limits of the safety corridor may result in a loss of solvency and potential bankruptcy. Many Russian companies have faced these threats. The problem of developing methodology for economic security analysis therefore remains relevant and demands further research.

REFERENCES

Abalkin, L.I., 1994. Economic security of Russia: Threats and their reflection. *Questions Economy*, 12: 4-13.

- Atabiev, A.K., 1998. Environmental security in the national security structure. Master Thesis, Institute of Market Problems, Bulgaria.
- Glansdorff, P. and I. Prigogine, 1973. *Thermodynamic Theory of Structure, Stability and Fluctuations*. Mir Publishers, Moscow, Russia.
- Glazyev, S.Y., 1997. Fundamentals ensuring economic without dangerous country an alternative course of reformation. *Russian Econ. J.*, 1: 3-16.
- Gordienko, D.V., 2012. *Fundamentals of Economic Security of the State*. Nauchno-izdatelskiy Tsentr INFRA-M, Moscow, Russia, Pages: 224.
- Hammond, P.J., 1984. What to Do About Business Cycle?. In: *Lectures on Schumpeterian Economics*, Seidl, C. (Eds.). Springer, Berlin, Germany, pp: 59-75.
- Kotova, N.N. and M.V. Valeschuk, 2015. The road map a tool for making strategic decisions. *Bull. SUSU. Econ. Manage. Ser.*, 9: 112-119.
- Kydland, F.E. and E.C. Prescott, 1982. Time to build and aggregate fluctuations. *Econometrica: J. Econ. Soc.*, 50: 1345-1370.
- Mindeli, L.E., 2012. Ensuring national security in the sphere of science, technology and education. *Society of Trust and Estate Practitioners*, Sydney, New South Wales, Australia.
- Nechayev, V.I. and P.V. Mikhailushkin, 2011. *Economic Dictionary*. Education-South Publishing, Krasnodar, Russia, Pages: 464.
- Patlasov, O.U. and O.V. Sergienko, 2007. Multiple discriminant analysis models predicting bankruptcy Altman: Interpretation and limit the use. *Econ. Anal.*, 1: 76-80.
- Primakin, A.I. and L.V. Bolshakova, 2012. The method of expert evaluations in solving problems of economic security of a business entity. Ministry Internal Affairs, Saint Petersburg State University, Saint Petersburg, Russia.
- Shlikov, V.V., 1999. *Complex Support of the Economic Security of the Enterprise*. Aletheia, Chicago, Illinois, Pages: 138.
- Tambovtsev, V.L., 1995. The economic security of the hosts-governmental systems: The structure of the problem. MBA Thesis, Moscow State University, Moscow, Russia.
- Vishnyakov, Y.D. and N.N. Radayev, 2008. *Total Risk Theory*. M Academy, Bangkok, Thailand, Pages: 368.
- Voropai, N.I. and S.M. Senderov, 2011. *Energy security: The essence, the basic problems, methods and results of research*. Institute of Economic Forecasting, Moscow, Russia.
- Zabrodsky, V.A. and N.I. Kapustin, 1999. Theoretical basis of assessment of the economic security of the industry and of the company. *Bus. Inf.*, 1999: 35-37.