

CRITERIA FOR OPERATING RISK TO DETERMINE AN ENTERPRISE'S ECONOMIC SECURITY

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Abstract

The research examines common approaches to the economic security of an enterprise and some of its integrating elements. Theoretical aspects of the economic security of enterprises in terms of criteria and indicators of financial activity are studied. Attention is also paid to the adaptation of certain indicators of the economic safety of an enterprise to the system of key performance indicators and their thresholds. The description of operating risk is given, the relationship of this type of risk with the indicator «operating leverage» and «financial safety margin» is analyzed, the criteria of this risk by levels are determined. Safe operating risk values are offered to determine operating leverage level and financial safety margin. A hypothesis has been put forward the universality of the proposed operating risk criteria, as well as the possibility to apply them to different enterprises. Examples of calculation of operating risk for individual Russian enterprises are given to evaluate and confirm the estimated criteria. Further prospects of research in the field of economic security of the enterprise in terms of determination of criteria of financial and total risks have been defined.

Keywords: economic security, operating risk, degree of operating leverage, financial safety margin

JEL Code: G-32, G-33

Introduction

One of the most important issues in enterprise management is the adaptability of the system of economic security to the system of key performance indicators (KPI). Currently, the KPI system is a strategic reference for any company. The financial component of the KPI system is to determine the level of risk. Risk management allows to predicting negative trends on time and the possibility to keep the operating enterprise in the future (Sergeev, 2019).

It is important to note that the definition of the level of risks also applies to the financial security system, one of the main elements of the economic security of the enterprise. The level of financial security is determined by various methods, which traditionally include indicators of financial stability, liquidity, profitability, business activity (Kvasnytska, Dotsenko & Matviychuk, 2019). Determining the level of operating risk will contribute to a more detailed assessment of some indicators of the internal efficiency of the enterprise. Therefore, the purpose of this research is to develop some operating risk criteria and to include them in the financial and economic security system of an enterprise.

1 Theoretical Aspects of Operating Risk Determination in the Enterprise Economic Security System

There is a lot of research into a risk-oriented approach to the economic security of an enterprise today (Kalashnikova, Tatarovskaya & Tselniker, 2018). Almost all of them consider certain indicators of operating or financial activity and analyze the impact of changes in these indicators on the final performance of any commercial enterprise - operating (OP or EBIT) or net profit (Guan, Zhang & Shang, 2016).

This study considers operating risk as a critical component of an operating analysis or CVP analysis (cost-value-price). Operating risk is an internal risk. It is related to the main activity of the enterprise and depends on the level of its costs. Some studies examine operating risk as an important component of the total or economic risk of an enterprise (Mihalciuc, 2018).

It is generally accepted that operating risk can be characterized by the degree of operating leverage defined by the formula:

$$DOL = \frac{\Delta EBIT(\%)}{\Delta SR(\%)} \quad (1)$$

$$DOL = \frac{MP}{EBIT} \quad (2)$$

where:

DOL - degree of operating leverage,

$\Delta EBIT(\%)$ - change in operating profit (%),

$\Delta SR(\%)$ - change in sales revenue (%),

MP - marginal profit.

It should be noted that in formula (1) sales revenue changes only under the influence of changes in sales volume. In other words, the cost of selling products should remain constant. Marginal profit includes fixed cost, so the higher their share of total enterprise costs, the higher the degree of operating leverage, the bigger the operating risk associated with a particular enterprise. Production companies were found to have a higher level of operating risk than service and trading enterprises (Kalinowski, 2017).

Operating risk can also be analyzed by the indicator financial safety margin, which is traditionally included in the system of indicators of financial and economic security of the enterprise (Kavyrshina, 2015). Financial safety margin (FSM) is defined based on the following formulas:

$$FSM = \frac{SR - SR_{BEP}}{SR} \times 100 \quad (3)$$

$$SR_{BEP} = \frac{FC \times SR}{MP} \quad (4)$$

where:

SR - sales revenue,

SR_{BEP} - sales revenue at the break-even point,

FC - fixed costs.

It is important to note that formula (4) is used for enterprises producing a large range of products. Sales revenue at the break-even point is a value, but if it is possible to divide constant costs by individual types of products, it is also possible to determine natural break-even volume (in units, tons, etc.). This study does not consider the degree of operating leverage and financial safety margin for individual products, as the purpose of the research is to determine the level of operating risk and then economic safety for the whole enterprise.

The relationship between the degree of operating leverage and financial safety margin indicators has been described by the author (Savchenko, 2011) and can also be determined by the following formulas:

$$DOL = \frac{100\%}{FSM} \quad (5)$$

$$FSM = \frac{100\%}{DOL} \quad (6)$$

The study (Ianioglo, 2016) analyzed the relationship between economic security and the performance of the enterprise. The given formulas determine levels of economic security, but there are no specific criteria for operating performance indicators (including for DOL and FSM).

2 Estimated operating risk criteria to determine the level of economic security of an enterprise

Many years of practice the author researched the example of various enterprises. It was found a relationship between indicators of CVP-analysis, which characterize the level of operating risk. The examination of this relationship made it possible to formulate certain criteria for the level of operating risk and, as a result, the level of economic security of an enterprise. In this study, operating risk is considered from the perspective of two indicators - degree of operating leverage and financial safety margin. From formulas (5) and (6) it can be seen that DOL and FSM are inverse. The larger the DOL, the smaller the FSM, and vice versa. A high DOL is dangerous because, with unfavorable market conditions and a decrease in demand for products, each percent of sales revenue reduction leads to an even greater decrease in enterprise profits. This can ultimately lead to a break-even level, and then a negative financial result, which can be attributed to the low level of economic security of the enterprise. On the contrary, the high FSM value suggests that the company can withstand a sufficient revenue reduction, and this will not particularly affect the change in profit. This financial condition is characterized by a low level of operating risk and it is logical to attribute it to a high level of economic security. In Table 1, the author presents universal criteria for determining operating risk.

Tab. 1: Enterprise Operating Risk Criteria

Indicator	Level of operating risk			
	Low	Moderate	Moderately high	High
Degree of operating leverage	< 3	3-10	10-20	>20
Financial safety				

margin, %	>33%	33-10%	10-5%	<5%
Level of economic security	High	Moderate	Moderately low	Low

Source: Author

The level of economic security presented in Table 1 can also be applied to financial security, it depends on the objectives of enterprise analysis. With a high level of economic security, the enterprise works steadily and sustainably, it can effectively achieve strategic goals, implement various technological projects. With a moderate level of security, there are some signs of tension, although overall the demand for products is stable and the cost structure is quite optimal. The identified moderately low level of economic security should make the company's management think about the necessary changes in assortment policy, sales markets, and, as a result, the possibility of reducing constant costs, as these types of costs increase operating risk while reducing sales and revenues. The low level of economic security is dangerous because, with a slight decline in production and sales, an enterprise can come close to the break-even point and, in the worst case, when costs exceed revenue, get losses. Some studies also highlight the worst-case scenario when there are signs of irreversible decline in business activity, calling it a critical level of economic security (Ianioglo, 2016). The author 's research is limited to the criterion of a low level of economic security.

3 Examples of using operating risk criteria in industrial enterprises

As proof of the possibility and feasibility of using the criteria given in Table 1, we consider the operating risk indicators using the example of three industrial enterprises in the steel industry. For some comparability of results of the analysis, there were chosen the companies which are not too different in activity scale having approximately identical sales levels (sales proceeds) and the sum of assets. Indicators, as well as operating risk and economic security levels for these enterprises for 2017-2018, are presented in Table 2.

Tab. 2: Determination of operating risk and economic security levels for enterprises

Indicators	Enterprise 1		Enterprise 2		Enterprise 3	
	2017	2018	2017	2018	2017	2018
1. Sales revenue, million roubles	72434.6	89068.9	40483.4	51579.2	118556.9	124371.9

2. Marginal profit, million roubles	56557.8	69937.1	15352.9	20037.7	39407.8	48518.1
3. Fixed costs, million roubles	33736.8	38089.9	13951.4	16356.4	32452.1	35584.4
4. Sales revenue at the break-even point, million roubles	43207.3	48509.7	36787.8	42103.1	97630.9	91216.8
5. Financial safety margin, %	40.3	45.5	9.1	18.4	17.7	26.6
6. Operating profit, million roubles	22821.0	31847.2	1401.5	3681.1	6955.7	12933.7
7. Degree of operating leverage	2.5	2.2	11.0	5.4	5.6	3.8
8. Level of operating risk	Low	Low	Moderately high	Moderate	Moderate	Moderate
9. Level of economic security	High	High	Moderately low	Moderate	Moderate	Moderate

Source: Accounting Statements from the official VSMPO-AVISMA website, Accounting Statements from the official STZ website, Accounting Statements from the official CMK website, author's calculations

All enterprise costs were divided into variable and fixed to prepare Table 2 calculations. Thus, the average annual depreciation amount, management costs, and part of the commercial costs were attributed to the fixed costs (the analysis of the costs of the steel industry showed that approximately 30% of the commercial costs could be classified as fixed types).

According to Table 2, we can sum up that the analyzed enterprises have different levels of operating risk and economic security. The enterprise 1 had a low operating risk and a high level of economic safety in 2017-2018. It is a world-famous producer of titanium and titanium alloys. The demand for the company's products during the analyzed period was growing and the level of costs was optimal which confirms the value of $DOL = 2.5$. Enterprise 2 had a moderately high operating risk in 2017 and, accordingly, a moderately low level of economic security.

Enterprise 3, the largest producer of high-quality steel in the Russian Federation, managed to reach a moderate level of operating risk and economic security in 2017-2018. Therefore, the submitted calculations suggest that the estimated set of criteria can be used to determine the level of operating risk.

Conclusion

To maintain the level of economic security, enterprises need specific indicators to determine it. The research proposed criteria to determine one of such indicators as operating risk. These criteria are considered in the example of three industrial enterprises of the metallurgical industry. It is assumed that the developed criteria can be applied to other industrial enterprises because the methods of forming costs for industrial enterprises are generally similar. It is useful to use these operating risk and economic security criteria to include them in a common system of key performance indicators. Further research in the field of economic security of the enterprise involves consideration of some criteria of financial and total risk, as well as a comparison of them with already formulated criteria of operating risk.

References

- Guan, B., Zhang, J., & Shang, Z. (2016). The analysis of operating leverage effects based on EBIT changes. *Proceedings of the 3d International Conference on applied social science research*. Volume 105, 1045-1047.
- Ianioglo, A. (2016). Indicators of enterprise operating activity and levels of its economic security. *CBU International Conference on Innovations in Science and Education*, 36-41.
- Kalashnikova, E., Tatarovskaya, T., & Tselniker, G. (2018). Risk-oriented approach in the system of enterprise economic security. *International Scientific Conference «Global Challenges and Prospects of the Modern Economic Development» (GCPMED2018)*, 677-687.
- Kalinowski, S. (2017). Operating risk of Polish public companies – sectoral differences. *Economics & Sociology*. Volume 10 (1), 22-34.
- Kavyrshina, O. (2015). Financial analysis tools in the enterprise's economic security system. *Conference: Development of machine-building enterprises in Russia: problems, experience, prospects*, 11-22.
- Kvasnytska, R., Dotsenko, I., & Matviychuk, L. (2019). Assessment of financial security of an enterprise in the system providing realization of its financial strategy. *Financial and credit activity-problems of theory and practice*. Volume 30 (3), 95-102.

Mihalciuc, C. (2018). Tools designed to analyze the enterprise economic risk and its usefulness for forecasting and managerial control. *The 14th Economic International Conference: Strategies and Development Policies of Territories: International, Country, Region, City, Location challenges*, 361-374.

Savchenko, N. (2011). Features of the definition of operational leverage in Russian practice. *Economic analysis*. Volume 28 (235), 32-35.

Sergeev, A. (2019). Economic security of the enterprise. URIGHT.

The official web site of CMK. Retrieved from: <http://www.mechel.ru/sector/steel/cmk/en/>

The official web site of STZ. Retrieved from: [https:// www.stz.tmk-group.ru/en/](https://www.stz.tmk-group.ru/en/)

The official web site of VSMPO-AVISMA. Retrieved from: <http://www.vsm-po.ru/en/>

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