Секція: Економіка та управління підприємствами (за видами економічної діяльності).

Comprehensive assessment of risks

Тарасова Кристина Ігорівна
викладач кафедри статистики Одеського національного економічного університету

Risk is the possibility that a company will have lower than anticipated profits, or that it will experience a loss rather than a profit. Business risk is influenced by numerous factors, including sales volume, per-unit price, input costs, competition, overall economic climate and government regulations. A company with a higher business risk should choose a capital structure that has a lower debt ratio to ensure that it can meet its financial obligations at all times [1, p. 17].

Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Quantitative risk assessment requires calculations of two components of risk:, the magnitude of the potential loss, and the probability that the loss will occur [2, p. 82]. Risk assessment consists of an objective evaluation of risk in which assumptions and uncertainties are clearly considered and presented. Part of the difficulty in risk management is that measurement of both of the quantities in which risk assessment is concerned – potential loss and probability of occurrence – can be very difficult to measure. The chance of error in measuring these two concepts is large.

To calculate business risk, analysts use four simple ratios: contribution margin, operation leverage effect, financial leverage effect and total leverage effect. For more complex calculations, analysts can incorporate methods such as: expert assessment of risk, statistical method, analytical method, rate method and so on.

However, modern economic literature for the most part is limited to the description of the existing methods, but refrains from recommendations on which one to use in the analysis of a project.

To choose a method which is better to use, we conducted an expert survey among enterprises of machine-building industry of Odessa region, whose task was to

identify those characteristics and qualities, which according to the respondents should have the "ideal" method of risk assessment. Grouped results of the study can be represented as a list of key parameters that can characterize a particular method of risk calculating. The list of parameters includes: minor financial cost, small investment of time, a high level of objectivity of the method, its application versatility, accessibility of information sources, the minimum number of experts, available software, simplicity of usage, completeness study of risk, longitude of usage

It is clear that each method does not have all of positive characteristics but has only a few. However, to choose the best method is not enough for it to have the majority of positive criteria, because most criteria are not equivalent to each other. Thus, the entrepreneur will certainly choose a less costly but longer method than fast but very expensive.

With this in mind, we asked respondents to rank the obtained criteria together. Ranging was conducted from one to ten: the least significant parameter was ranked one, the most significant – ten. The results of the criteria ranking for optimal risk assessment is listed in Table 1.

Table 1

Ranging of criteria for quantitative risk assessment

The criterion of risk assessment	The rank of assessment criteria
Minor financial cost	9
Small investment of time	7
High level of objectivity of the method	10
Application versatility	8
Accessibility of information sources	5
Minimum number of experts	2
Available software	3
Simplicity of usage	6
Completeness study of risk	4
Longitude of usage	1

As can be seen from Table 1 the level of perceived objectivity of the evaluation is seen by experts as the most important criterion. The second place is taken by financial costs of research, the third – by the versatility of the method. Longitude of usage ranks the last.

The next step of our study is the comparison between quantitative risk assessment methods and criteria that may characterize them. Also, each method is assigned with its own assessment, depending on how much and what are the criteria for significance of this described method.

Our analysis shows that the statistical method of quantitative risk assessment is the best according to such criteria as: minor financial cost, small investment of time, a high level of objectivity, universality of application, the minimum number of experts, available software and simplicity of usage.

The next place takes rating method, which can be characterized by such criteria as: minor financial cost, versatility, availability of information sources, the minimum number of experts, available software and simplicity of usage.

Third place was shared by the method of expert estimations method and method of analysis of feasibility of costs, which scored 22 points each. Last place was taken by underdeveloped in national economic conditions unique method of analogies.

Thus, the analysis showed the most attractive for businesses methods of quantitative risk assessment. However, their separate usage won't give reliable results about the influence of risk on the enterprise. The usage of literature [1,2] and conducting management consulting shown that chosen methods should have the most significant advantages and minor disadvantages and we must apply them not separately, but in combination, because it is possible to address the shortcomings of one method by applying other methods.

So, the author proposes a new approach to the evaluation of economic risk, based on an integrated use of quantitative methods of analysis. The components of the combined evaluation of the following four methods that occupied a high place in the criteria analysis:

- Statistical method;
- The method of fault tree;
- Rating method;
- Method of expert estimations.

Application of elements of the statistical method can detect risk situations, but this method does not identify the specific risks of the company, and considers risk as a single value. This method causes the usage of fault tree, which helps to identify the totality of risks faced by the company during its operations. But it is not able to specify the amount of risk, indicating no need to use other methods. Thus, the ranking method is based on the financial performance of the company and can give an accurate assessment of the risks of internal functioning of the organization. The method of expert estimations will assess the risks arising at the meso- and macro levels and are not influenced by the company itself.

The proposed algorithm of comprehensive method consists of five stages:

1. Identification of risk situation at the enterprise.
2. Carrying out statistical analysis of risks at the enterprise.
3. The usage of fault tree. Selection of risks affecting the company.
4. Assessment of internal risks of the company. Rating method.
5. Determination the level of external risk by using the method of expert estimations.

In conclusion, we note that with the proposed five phased comprehensive method of risk assessment, you can identify the risky situation at the enterprise by analyzing the dynamics of the main indicators of its activity and give a quick assessment of the risk situation at the plant using statistical methods. Method of fault trees specifies the risks faced by the organization in its activities, and the use of rating and expert method indicate that specific environment is a major cause of risk and what risk reduction techniques are best to be applied.

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