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**THE PROBLEM OF RISK ASSESSMENT IN THE CHEMICAL
INDUSTRY IN RUSSIAN REGIONS**

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Abstract

The article deals with problematic issues of risk assessment of chemical industry companies. Authors studied theoretical and applied issues of risk assessment and their factors, the legal framework for risk assessment in the real sector of the economy, analyzed the materials of annual reporting of companies under study. Theoretical analysis revealed modern trends and peculiarities of chemical industry risk assessment. The analyzed annual reports of the largest chemical industry entities allowed the authors to identify the shortcomings of risk assessment practices and their factors in the activities of companies in the industry. The studied legislative practice has shown inconsistency between the theory and normative documents. The approach of the rating agency has shown the nature of interest of external users and the possibility of their evaluation. On the basis of the analysis, the authors schematically present aspects of risk assessment of chemical industry companies, taking into account external and internal information available to various categories of assessment subjects, industry specific risks that meet the requirements for information disclosure by issuers, categorization of the risk itself and its determinants. This is not always emphasized in legislation and annual reports. Proposed developments can be used by employees of analytical services of chemical industry companies to improve risk assessment in their activities, by contractors - to clarify the level of risk, its factors and their leveling when working with companies in the chemical industry, in research activities and in the work of authorities to model the development of the chemical complex.

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Keywords: Chemical industry, risks, risk factors, risk assessment, annual reporting.



1. Introduction

Risk assessment is an issue that has been repeatedly studied by both domestic and foreign scientists. However, the dynamics of the economic environment, wide differentiation and variability of assessment objects, evolution of assessment methods and information base make it necessary to constantly improve and modify the methodological apparatus for risk assessment with respect to specific objects in specific periods of time.

2. Problem Statement

The problem of risk assessment in the economy is multifaceted and complex. While in some sectors of the economy (banking sector, financial markets, insurance, etc.) risk assessment is possible and justified using probabilistic and statistical methods, in other cases, the lack of the necessary amount of information leads to the need for other methods, which are not so clear for interpretation and are often based on professional (expert) judgments (Malakhov & Pilnik, 2013, Berzon & Volodin, 2010).

The volume of information on industrial activity, despite the seeming richness, differs from the information on financial markets and insurance by its significant temporal discreteness: if financial transactions are performed many times a day, the economic entities - joint stock companies, limited liability companies - publish the information most frequently with a frequency of one quarter. In addition, risks in the real sector are usually associated with investment projects, which are usually unique in the industry and have no close equivalents. As a result, there is a lack of necessary information for statistical risk analysis (Ostapkovich, Lola, & Kitrar, 2014; Osmakov & Kalinin, 2017).

The second main reason for the complexity of a specific risk assessment in industry is the instability of the external environment in terms of time and heterogeneity - in terms of territories, as a consequence - the frequent uselessness of the results of retrospective studies for applied purposes, but their undoubted usefulness as a toolkit for analysts (Boyko, 2005; Zamyatina & Pilasov, 2016).

This determines the need to conduct research on risk assessment methods for industrial companies. The object of the study is chemical industry companies operating in Russian regions.

3. Research Questions

The subject of the research is methodological (both theoretical and applied) aspects of risk assessment of chemical industry companies and their factors.

The object of the research is the companies of the type of activity "Production of chemical substances and chemical products" (according to the All-Russian Classifier of Economic Activities (OKVED) 2), which operate in the regions of Russia (excluding Moscow and Moscow region). Concretization of the territorial belonging of the research objects will allow to show regional peculiarities of the risk environment of the companies of the industry and exclude from the sample the obvious leaders concentrated at the place of registration in the capital region.

4. Purpose of the Study

The main objective of the work is to study applied and theoretical research experience in risk assessment of chemical industry companies in Russia's regions and to develop a system of corporate risk assessment of chemical industry companies, taking into account the effectiveness of their activities and the interests of assessors in different positions.

5. Research Methods

When performing the research, the set of methods used is divided into two parts:

- descriptive and generalization methods for the study of theoretical developments in the field of risk assessment of chemical companies;
- methods of statistical analysis, economic analysis (in terms of statistical material), methods of induction and deduction (in terms of research of risk assessment experience of companies in the chemical industry in Russia's regions).

The analysis is based on the following materials:

- in theoretical aspect: works of domestic scientists, which are close on the subject of our research, in particular, monographs and research works;
- in the applied aspect: annual reports of public companies in the industry and materials of the First Independent Rating Agency.

6. Findings

In the first part of the study we look at the experience of risk assessment and risk factors of chemical industry companies in the academic environment.

In this study, we look at two perspectives on the assessment of risks and risk factors for chemical companies in Russia's regions:

- theoretical, including works of Russian scientists on the declared and close subjects;
- applied to the legislative regulation of risk assessment and the results of this assessment by rating agencies and public companies.

The study of risk problems in industrial production should start with the paradox of Bowman, which is primarily implemented in the real sector (Bowman, 1980). In the original work was carried out research in the period from 1968 to 1976, on the materials of more than one and a half thousand enterprises. The absence of a statistical relationship between risk and profitability was confirmed by the calculation of profitability, profit and dispersion across a number of industries, similar to the Bowman study conducted in later years for Russian companies (Ramenskaya, 2015). According to the study, the difference between the number of companies for which high risk is combined with high profitability, and the number of companies which have high risk combined with low profitability, is 1.86 times in favor of the latter.

As controversial points of this type of research it should be noted:

- long period of analysis, which levels the influence of random fluctuations, but does not allow to trace the dependence of risk and profitability within a particular economic period, such an approach allows

to draw conclusions on the scale of economic development as a whole and within the framework of economic theory, but has a weak effect on applied works;

- the periodicity of the reporting for which the analysis is carried out is from 1 quarter to 1 year, and as a consequence, it already shows the results of the long period of time and hides the choices in risk situations within these periods; the results of the analysis give a general, smoothed picture of the companies' activities, but not for individual projects, for which the level of risk is usually calculated;

- the studies show particular contradictions with the generally accepted theory of risk and profitability, but do not reveal stable dependence or trends.

Against this background, the problem of developing a system of risk assessment and management in the real sector of the economy, in particular, the chemical industry, seems to be relevant. The authors' studies in the field of chemical industry risk management (Anikin, 2008; Rygalovskiy, 2017a, 2017b; Sherstobitova, 2015) show that for the industry an important aspect is the study of risks in relation to specific projects and processes, and also allows us to identify two types of risks:

- industry-specific and differentiated for each specific type of activity (by chemical industry);
- standard, typical for all industries and types of activities (financial, macroeconomic, tax, etc.) and acquiring its specificity for the chemical industry only due to the need for comparative assessment with analogues and research of development trends in specific markets and regions (Berezhnaya, Berezhnaya, Chikaeva, Polivina, & Berezhnoy, 2018).

In Russia, only issuers of equity securities are required by law to publish information on risk factors (risks) (Regulatory Act RF, No. 35989, 2014). In accordance with the Regulation on Information Disclosure by Issuers of Equity Securities No. 454-P dated 30 December 2014, information on risks associated with the acquisition of equity securities to be placed is provided in the annual report in the context of risk factors: industry risks, country and regional risks, financial risks, legal risks, risk of loss of business reputation (reputation risk), strategic risk, risks associated with the Issuer's business, banking risks.

The analysis of annual reports of public joint stock companies in the chemical industry has shown the following features (Interfax, 2019).

Firstly, the quality of information in this part of the report directly depends on the company's position in the industry and the holding structure (if the company belongs to holdings, concerns and other similar structures): the more significant the position, the more detailed the section on risk factors is. Thus, risks are considered in detail, described, the level, changes and measures to minimize the risk are assessed in the report of PJSC "Uralkali", one of the industry leaders. At the same time, a number of joint stock companies in the chemical industry either give concise information in the reports or do not publish annual reports due to the lack of equity securities in their operations.

Secondly, despite the above list of risk factors, many companies are independently introducing the categories they consider necessary for their report, which leads to overlaps between the risk factors in terms of their content and the difficulty of objective analysis. Examples of such categories are commercial risks (included in the general classification in the issuer's business and industry risks), insurance risks, production risks, etc. The other side of such detail leads to the expansion of certain relevant aspects of risk: environmental risks, social risks, etc.

It should be noted that there is no clear distinction between "risk factor" and "risk" in the legislation, which requires studying the issue in the activities of companies and in theoretical works.

The experience of external risk assessment in Russia is insignificant. The largest rating agencies of the country, such as Expert RA, indicate the credit rating of companies (often only the largest ones), but do not focus on the risks. The First Independent Rating Agency (LLC "PNRA") evaluates the risks of each company regardless of its organizational and legal form according to the data of public reporting in the context of industry, operational, organizational and legal, other business and financial risks with details on specific factors.

In our view, the risk assessment of chemical industry companies in the Russian regions should be carried out in terms of the following aspects (Fig.1)

- accounting for the differentiation of information support between internal and external users of information;
- differentiation of risks as the probability of losses / excess profits and risk factors;
- use of different approaches to risk assessment and management depending on the type of activity and type of risk factors;
- identification of specific risks and general economic risks.

Aspects of risk assessment and their factors for chemical industry companies in Russian regions		
Informational support for the evaluation		
Internal users: - have access to insider information; - can assess the internal risk factors in detail	Internal users:	
	- with access to insider information - investors, credit organizations, etc.	- without access to insider information - counterparties, analysts, etc.
Categorization of risks and risk factors		
Risks - the probability of losses in the event of a risk event; requires details of the likely risk events, probabilities and cost estimates of losses.	Risk factors - characteristics of the internal and external environment of the object, increasing the probability of the occurrence of a risk event	
Application of different approaches to risk assessment and management		
Main activities: process approach; has the most pronounced industrial character; production risks, market risks, etc.	Investment activity: objective approach; risk assessment in the context of specific investment objects; investment risks taking into account their factors.	Financial activity: portfolio approach based on the banking practice of asset management; financial risks.
Industry-specific risks and general economic risks		
General economic risks: - business reputation risk (reputation risk), - financial risks	Risks that are both specific and general economic in nature: - country and regional risks, - legal risks, -strategic risks;	Specific risks: - branch risks; - risks related to the Issuer's business

Figure 01. Aspects of risk assessment and their factors for companies of chemical industry in the regions of Russia

7. Conclusion

The study revealed the specifics, advantages and disadvantages of the Russian practice of risk assessment of chemical industry companies in the Russian regions. The object of the analysis were the companies operating in the field of chemical industry in the regions of Russia. Conclusions were made on the specifics of risk assessment in theoretical works, in legislation and annual reports of companies, as well as by rating agencies. Based on the results of the analysis, the authors highlighted the main aspects of risk assessment of chemical industry companies, taking into account the legislation and assessment practices, as well as deficiencies identified in the available methods.

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