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# **SCENARIO APPROACH TO QUANTITATIVE ASSESSMENT OF FINANCIAL RISKS OF THE COMPANY**

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### *Abstract*

There are many original and interesting works in the economic literature that describe the problems of the financial risk assessment of an enterprise. The financial risks of companies can be situational, because each market situation is highly volatile and unpredictable. According to the author, a scenario approach is needed to conduct a quantitative assessment of the company's financial risks. To take effective measures to manage financial risks, in particular interest rate risk, the company needs to simulate practical situations and quantify this risk for each situation. When the main risks accompanying the company's activities are identified and analysed, for their further quantitative assessment and planning of optimization measures, the risk prioritization procedure is carried out. Risk prioritization-risk analysis in order to determine the most critical in terms of probability and damage and, accordingly, the most priority for the company. The scenario approach is a tool that allows you to quantify each financial risk, establish the real capabilities of the company and select the best ways and mechanisms to reduce risks. Scenario approach is a flexible tool that provides an opportunity to choose development options. It allows you to configure the financial model of the company for specific tasks. With the help of the scenario approach, you can see different development options, choose optimal ways to achieve a strategic goal and conduct a sensitivity analysis in order to understand what factors affect the business.

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**Keywords:** Scenario approach, financial risk, interest rate risk, quantification, financial result.



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## 1. Introduction

Having identified and analyzed the main risks of the company, to quantify and plan measures to optimize risks, first of all, it is necessary to prioritize the potential risks of the company. Risk prioritization is a risk analysis to identify the most critical, probable, dangerous and, accordingly, the highest priorities for the company (Abasova, 2016; Alekseeva, 2016).

Damage from risk can be measured in cash (financial loss) or damage to the company's reputation. The probability of risk depends on the history of such risk in the past and the level of uncertainty associated with the risk and complexity of the processes (Blank, 2014).

Based on the results of the analysis, the risks of the company can be divided into three levels:

- High risks – such risks are unacceptable for the company and require active management actions. Decisions to reduce such risks are taken at the level of the management board of the company. These decisions have the highest priority in terms of implementation and provision of financial resources;
- Medium risks – such risks decisions are made at the level of structural divisions of the company and risk owners. Deadlines for the implementation of decisions are set based on the availability and schedule of financing management decisions, as well as the optimal time required for the implementation of a specific event;
- Low risks – these risks are acceptable for the company and do not require serious financing. Decisions made are limited to the implementation of procedures and procurements of goods and services that ensure the prevention and reduction of the negative consequences of risk. Risk boundaries are determined, and monitoring is carried out to take action in case of risk level change (Kaschuba, 2018; Vasin & Schutov, 2017; Vorobyev & Baldin, 2013).

In order to calculate the probability of risk realization, the following points should be considered:

- has this risk been realized in the past;
- does the realization of risk depend on external factors outside the control of the company;
- are specific measures being taken to reduce this risk?
- does the company have enough competencies and resources to manage this risk;
- are there recent events and factors that indicate that the chance of risk is growing (Blank, 2014; Lapusta & Scharschukova, 2013; Voronina, 2013).

## 2. Problem Statement

We apply a scenario-based approach to quantifying the percentage risk of a company. As you know, interest rate risk is the risk of financial losses because of adverse changes in interest rates (Blank, 2014; Lapusta & Scharschukova, 2013; Schagin, 2017; Stoyanova, 2017).

## 3. Research Questions

Changes in interest rates can occur even under existing loan agreements. This, in turn, is realized in increasing interest payments. Considering various scenarios of changes in interest rates on bank loans,

we can trace the consequences of the implementation of this risk on the financial results of the company (Stoyanova, 2017; Stupakov & Tokarenko, 2017; Tichomirov, 2018).

Due to the limited amount of information, we will choose the net profit of the company as the resulting indicator, and we will build scenarios using the example of the report on financial results of Krais-Oil LLC for 2018.

#### 4. Purpose of the Study

As possible options for changing the interest rate, the scenarios presented in Table 01 were considered and analyzed. It should be noted that possible options were developed on the basis of historical data on average interest rates in 2016–2018.

**Table 01.** Interest rate risk scenarios\*

Scenarios	Basicvalue, percent	Actualvalue, percent	Change, percent	Historical periods of implementation
Scenario № 1	9.83	20.34	107	April 2017–December 2018
Scenario № 2	9.83	17.83	83	April 2017–February 2018
Scenario № 3	9.83	11.74	19	April 2017–November 2018

\*Source: compiled by the author on the basis of statistical information

#### 5. Research Methods

Table 02 presents the first scenario for the implementation of interest rate risk.

**Table 02.** Financial model of the impact of changes in interest rates on loans, thousand rubles\*

Indicator	2018	Scenario № 1	Change, percent
Revenue	10 121209	10 121209	0
Costprice	9478406	9 478406	0
Grossprofit	642803	642803	0
Commercialexpenses	415091	415091	0
Administrativeexpenses	0	0	0
Profit (loss) on sales	227712	227712	0
Interestreceivable	233	233	0
Interestpayable	97999	202857.93	107
Otherincome	4999	4999	0
Otherexpenses	11227	11227	0
Profit (loss) beforetax	123718	18859.07	–84.76
Profittax	24995	3 810.14	–84.76
Change in deferred tax liabilities	16	16	0
Change deferred tax assets	–115	–115	0
Etc	–15	–15	
Net profit (loss) of the reporting period	98609	14934.98	–84.85

\*Source: compiled by the author on the basis of accounting statements of LLC "Kreis-Oil".

This scenario is the most pessimistic and represents the maximum increase in the interest rate for the period under consideration. The rate increase in this option is 107%. So interest payable should be increased by the same amount.

This increase in interest payable will entail a 84.76% decrease in profit before tax and an even greater decrease in net profit by 84.85%.

Thus, the maximum realization of this risk will not lead to losses of the reporting period, but will significantly reduce the financial result of the company.

Consider the second possible scenario (see table. 03).

**Table 03.** Financial model of the impact of changes in interest rates on loans, thousand rubles\*

Indicator	2018	Scenario № 2	Change, percent
Revenue	10121209	10 121209	0
Costprice	9478406	9 478406	0
Grossprofit	642803	642803	0
Commercialexpenses	415091	415091	0
Administrativeexpenses	0	0	0
Profit (loss) on sales	227712	227712	0
Interestreceivable	233	233	0
Interestpayable	97999	179338.17	83
Otherincome	4999	4999	0
Otherexpenses	11227	11227	0
Profit (loss) beforetax	123718	42328.83	-65.75
Profittax	24995	8 465.77	-65.75
Change in deferred tax liabilities	16	16	0
Change deferred tax assets	-115	-115	0
Etc	-15	-15	0
Net profit (loss) of the reporting period	98609	33717.06	-65.85

\*Source: compiled by the author on the basis of accounting statements of LLC "Kreis-Oil".

In this case, the increase in the interest rate will be 83% (similar to the historical rate increase in the period from April 2017 to February 2018 from 9.83 to 17.83%). This interest rate increase will proportionally increase the amount of interest payable. In turn, profit before tax will decrease by 65.75 %. In this embodiment, the implementation of interest rate risk will lead to a reduction in net profit by 65.85 %. It will also negatively affect the financial position of the company and the possibility of self-financing.

In conclusion, we analyze the third scenario for the implementation of interest rate risk. From Table 04 it is clear that such a slight increase in the interest rate will affect the final financial result of the company. An increase in interest payable by 19% will entail a 15.05% decrease in pre-tax profit and a 15.07 % net profit.

**Table 04.** Financial model of the impact of interest rate changes, thousand rubles\*

Indicator	2018	Scenario № 3	Change, percent
Revenue	10121209	10 121209	0
Costprice	9478406	9 478406	0
Grossprofit	642803	642803	0
Commercialexpenses	415091	415091	0
Administrativeexpenses	0	0	0
Profit (loss) on sales	227712	227712	0
Interestreceivable	233	233	0
Interestpayable	97999	116618,81	19
Otherincome	4999	4999	0
Otherexpenses	11227	11227	0
Profit (loss) beforetax	123718	105098,19	-15.05
Profittax	24995	21 233.20	-15.05
Change in deferred tax liabilities	16	16	0
Change deferred tax assets	-115	-115	0
Etc	-15	-15	0
Net profit (loss) of the reporting period	98609	83751	-15.07

\*Source: compiled by the author on the basis of accounting statements of LLC "Kreis-Oil".

## 6. Findings

Based on the presented models, it can be concluded that interest rate risk is indeed one of the highest for the enterprise, and changes in interest rates pose real threats to the performance and financial condition of Kreis-Oil LLC. In general, having examined various scenarios for the implementation of interest rate risk, we can say that with this structure of the report on financial results, when the interest rate changes by 1%, the final financial result will change by 8%.

In addition, it is worth noting that the use of borrowed capital can bring economic benefits for the company in the form of increased return on equity and the emergence of tax savings only with a positive indicator of the effect of financial leverage. To confirm the relevance of interest rate risk, we consider the effect of changes in interest rates on bank loans on the indicator of the effect of financial leverage (see table 05).

**Table 05.** Financial model of the impact of interest rate changes on the indicator of the effect of financial leverage, thousand rubles\*

Indicator	2018	Scenario № 1	Scenario №2	Scenario № 3
Borrowedcapital	1324722	1 324722	1 324722	1 324722
Owncapital	604463	604463	604463	604463
Assets	1929185	1 929185	1 929185	1 929185
Profitbeforetax	123718	18 859.07	42378.83	105098.19
Interestpayable	97999	202857.93	179338.17	116618.81
EBIT	221717	221717	221717	221717
ROA	11.49	11.49	11.49	11.49
Return on borrowed capital	9.80	20.34	17.83	11.74
The rate of income tax	0.20	0.20	0.20	0.20
The effect of financial leverage	2.97	-15.51	-11.11	-0.43

\*Source: compiled by the author on the basis of accounting statements of LLC "Kreis-Oil".

It can be seen from the presented model that in 2018, the indicator of the effect of financial leverage was a positive value and was equal to 2.97 %. This value indicates the feasibility and effectiveness of debt financing. However, all of the presented scenarios are characterized by a negative value of the effect of financial leverage. This indicates a danger to the financial situation of the company using borrowed funds at given volumes and interest rates for use. Thus, we can conclude that the implementation of interest rate risk requires optimization of borrowed funds.

## 7. Conclusion

The scenario approach is a tool that allows you to evaluate each of the financial risks, establish real opportunities for the company and choose the optimal ways and mechanisms to overcome them.

The scenario approach is a flexible tool that allows the choice of development options. It allows you to configure the financial model of the company for specific tasks. With the help of the scenario approach, you can see different development options, choose optimal ways to achieve a strategic goal and conduct a sensitivity analysis in order to understand what factors affect the business.

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