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METHODOLOGICAL PRINCIPLES OF THE STRATEGIC ANALYSIS OF INCOME


Abstract

Introduction. The urgency of the scientific article is determined by the place of the company's income strategic analysis in the financial management system and by the inadequate degree of justification of its methodological basis.

Purpose. The purpose of the article is to develop the methodology of the income strategic analysis in the conditions of uncertainty and risk.

The method (methodology). The dialectical method of understanding the economic processes is the theoretical and methodological basis of the investigation. Such methods are used for achieving the purpose and solving the tasks of the article: method of analysis and synthesis, method of induction and deduction, abstract and logical method, method of comparison, method of modeling, methods of economic statistics.

Results. The economic essence of the category of "income" considering risk is specified in the accordance to the strategic analysis requirements. The system of methodological elements of strategic analysis of the company's income is substantiated according to the logic and methodology of scientific investigation. It is proved that income is a complex economic category; its research requires the use of a systematic integrated approach. The system of strategic analysis indicators is constructed. The indicators sequence is determined in the accordance to income formation. It is established that the strategic analysis of income which is based on the principles of consistency and comprehensiveness requires to coordinate logically the results of the research obtained by different indicators utilization, to study the dynamics of relations among them, to take into consideration comprehensively the impact of factors on the indicators chosen as key for the performance evaluation.

The methodical approach to the estimation of the relations among the profitability of the flour-and-cereals industry's enterprises, their capital structure and the level of financial risk are developed.

The obtained results have the practical value because they contribute to systems integration of the strategic financial analysis and the financial management requirements and create conditions for its implementation in practice of domestic enterprises.

Keywords: effect of financial leverage; uncertainty; income; strategic analysis; strategic objectives; capital structure; financial strategy.

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МЕТОДОЛОГІЧНІ ЗАСАДИ СТРАТЕГІЧНОГО АНАЛІЗУ ПРИБУТКУ

Анотація

Вступ. Актуальність наукової статті визначається місцем стратегічного аналізу прибутку підприємства в системі фінансового менеджменту та недостатнім ступенем обґрунтування його методологічних і методичних засад.

Мета. Метою статті є розробити методику стратегічного аналізу прибутку в умовах невизначеності та ризику.

Метод (методологія). Методологічною та теоретичною основою дослідження є діалектичний метод пізнання економічних процесів. При проведенні дослідження для досягнення мети та розв'язання завдань, викладених у статті, використовувалися такі методи: аналізу та синтезу, індукції та дедукції, абстрактно-логічній, порівняння, моделювання, методи економічної статистики.

Результати. Уточнено економічну сутність категорії «прибуток» із врахуванням ризику виходячи з потреб стратегічного аналізу. Обґрунтовано систему методологічних елементів стратегічного аналізу прибутку підприємства виходячи з логіки та методології наукового пізнання. Доведено, що прибуток – це складна економічна категорія, дослідження якої потребує використання системного комплексного підходу. Побудовано систему показників стратегічного аналізу, встановлено послідовність формування показників відповідно до логіки процесу формування прибутку. Встановлено, що стратегічний аналіз прибутку підприємства, виходячи з принципів системності та комплексності, вимагає логічної ув'язки результатів дослідження з використанням різних показників, вивчення динаміки співвідношень між ними, всебічного врахування впливу факторів на показники, обрані у якості ключових для оцінки ефективності діяльності. Розроблено методичній підхід оцінки взаємозв'язку прибутковості підприємства борошномельно-круп’яної промисловості з структурою їх капіталу та рівнем фінансового ризику. Одержані результати мають практичну цінність, оскільки сприятимуть системній інтеграції стратегічного фінансового аналізу з вимогами фінансового менеджменту та створять передумови для його впровадження у практику вітчизняних підприємств.

Ключові слова: ефект фінансового левереджу; невизначеність; прибуток; ризик; стратегічний аналіз; стратегічні цілі; структура капіталу; фінансова стратегія.

JEL classification: G31, G32, M40

Introduction

The income is one of the key activity performance indicators because the enterprise functioning is defined by its ability to achieve a high level of financial results in the market conditions. The income is the main internal source of current and future development self-financing the strategic objectives providing and the enterprise’s competitiveness ensuring in the market. In the terms of uncertainty and risk the attention to the income implementation of compensatory and guarantee functions is increasing. Each entity has to compare different variants in terms of expected profits and to choose for itself the most effective one to select the market segment and the sphere for entrepreneurial skills realization.

In order to ensure the stability of income it is significant to provide the rate of return in a particular market. This allows to determine the impact of business risks on the enterprise’s activities. Thus, in the fact the income is a combination of various elements, including the implicit return on capital, compensation for risk and profit from innovations [1, p. 245].

The expectations of profit encourage entrepreneurs to find the best way of resources application. Hence, the main function of the income is to encourage innovation, search for ways of technology improvement [2, p. 52]. In the conditions of uncertainty any company is not protected entirely against threats of the external environment, but
the existence of potential to generate income facilitates to overcome the crisis if it is required, to reduce the risk of paying capacity decreasing because of the opportunity to increase the share of liquid assets by available income capitalization, to decrease the necessity of external funding.

Since the current state of the economic development is characterized by a high level of risk and uncertainty there is an urgent necessity to diagnose the causes of the reduction of financial results and future income evaluation. However, traditional methodologies of income factor analysis do not allow investigating this object of analysis because they do not take into consideration the external factors influence on the business activity and financial results. So such problems of analytical methodology are relevant: the financial results formation in the terms of uncertainty and risk; the substantiation of cause-effect relationships between the level of income and enterprise's capital structure; the development of the income strategic analysis' methodology to formulate effective strategies of business activity.

Issues of the strategic analysis of enterprise’s income are considered in the works of many national and foreign scientists, including O. M. Bandurko [3], I. O. Blank [4], N. O. Vlasyva [5], V. V. Kovaljov [6], O. A. Kryklij [7], N. A. Lumpov [8], V. O. Mets [9], K. I. Redchenko [10], H. V. Savitska [11], M. H. Chumachenko [12]. However, until now in the state of formation are its methodological foundations, the essence of the category of "income" as the object of analytical knowledge is not substantiated, the systems of indicators and factors that allow to diagnose the causes of financial results reduction and to estimate the expected income level are not designed, and, as the result, the methodology of financial results strategic analysis in the conditions of uncertainty and risk is not developed.

Purpose and Objectives

The purpose of the article is to develop the methodology of the income strategic analysis in the conditions of uncertainty and risk. The main objectives are to specify the essence of income in the accordance to the strategic analysis requirements on the basis of scientific approaches generalization; to substantiate the main methodological elements of the income strategic analysis according to systematic and integrated approaches.

Results of the research

According to the results of the conducted investigation, there are many methods of financial results analysis, but they do not allow to take into account all factors of income creation. In connection with the fact that income is arising from organic, absolute unpredictability course of events, from elementary factor, sometimes it is impossible to predict the results of human activity, even the probable assumptions about them are not feasible and have no sense [13]. Thus, in the terms of uncertainty it is primarily important to take into consideration the risk in the process of the income analysis, so there is an objective necessity to find the modern analytical methodology.

Strategic analysis as the function of strategic management has to prepare a set of alternatives for decision-making to achieve high end results with the lowest costs. This is almost always problematic since in the conditions of uncertainty the adoption of alternatives and their appropriate analytical argumentation are very complex procedures.

In the process of strategic analysis the income should be represented as the result associated with the economic process duration (the longer it is, with the greater degree of uncertainty of the external and internal environment it is associated). And these changes, in turn, are the most associated with risk, and they lead to the emergence of new risks, new their interdependencies and relationships with income. So the clarification of the category of "income" on the basis of risk is particularly important nowadays.

In spite of that, the category of "income" is changed and complicated during the development of economic thought there is no consensus among scientists about its interpretation until now. The generally accepted definition characterizes the income as the amount that can be used for a certain period to maintain the level of wealth existing in the fixed moment of the period. In accordance to this definition, J. R. Hicks determines the income as the excess of revenues from the sales of goods and services over the costs for their production and sales. This definition is a basis for the interpretation of the notion of "income" by modern economists.

In contemporary theory and practice of the accounting and analysis according to the basic approach income is conventionally divided into economic and accounting.

The accounting income is a residual profit that is equal to the amount of revenues from sales minus costs. It includes implicit return on capital [1, p. 245].

The accounting income is calculated as the difference between revenues of the company and external (accounting) costs [5, p. 12; 14, p. 53]. In compliance with The Law of Ukraine «On Accounting and Financial Reporting in Ukraine», the enterprise’s income is determined as the difference between the company's revenues and the expenses that are made to obtain those revenues [15]. O. M. Bandurko [3], A. H. Zahorodnij [16], S. V. Pokropynnych [17] define income through the mechanism of its formation in accordance to the accounting point of view. Thus, the accounting definition of income offers to determine it primarily as a designed value and does not always reveal the essential essence of income.
The economic income is computed on the bases of the dynamics of capital market estimates or liquidation balance sheet. Thus, V. V. Kovalev in accordance to the economic interpretation characterizes income (loss) as an increase (decrease) in owners’ equity that occurs during the reporting period [18]. Incidentally, the level of economic income is conditional.

The economic income is determined as the difference among revenues, obvious (accounting) and implicit (not evident) or alternative costs. According to the level of economic income it can be understood whether it satisfies the entity, that is whether it repays the economic costs and ensures a normal profit.

Thus, the difference between accounting and economic income is in the determination of the costs. In particular, for the calculation of the economic income, besides the accounting costs, the opportunity costs are taken into consideration (costs associated with missed opportunities): the wage, which could be obtained by entrepreneur if he was a employee; the rents for the company’s property; the minimum income which could be obtained by investing in any other business at the same level of risk.

The most widely spread approaches to the interpretation of the definition of "income" are – as a form of net profit [4; 19]; 2) as a part of additional product [20; 21]; 3) as a source of economic resources, equity increase, characteristic of production efficiency [9]. Generalizing the scientific approaches to the interpretation of the essence of the income, it can be confirmed that in modern conditions the definition of this notion has to be depended on the integrated approach which allows to consolidate the economic and accounting income. Respectively, the income is the positive form of financial result of the reporting period leading to the equity growth because of the excess of revenues obtained from business activities over the expenses incurred for its implementation; it describes the compensation for the utilization of business capabilities required to hold it in the relevant sphere of activity, for risks associated with unpredictable and uncontrollable changes in demand (income) and supply (cost) which appear in the process of business activity.

So, on the one side, we suggest to determine income as the internal source of enterprise's development, which serves as the profits in the economic meaning, on the other side – as the general indicator that is defined as the difference between revenues and expenses of business activities. Such interpretation of income allows to formulate the methodology of its analysis more accurately and to improve its objectiveness.

The purpose of the income strategic analysis is determined by the aim of business activity and by the requirements of analytical information users for decision-making. The main goal of any company as a complex socio-economic system, which is characterized by a multifaceted structure of internal factors interaction and continuous relationship with environmental factors, is not determined by one key criterion; it can be represented adequately by a set of objectives (the market value maximization, income maximization, added value maximization, production costs minimization, product quality improvement, competitive position increase through innovation, etc.). The significant problem is to coordinate a set of the company’s objectives because they can have a different focus and even be contradictory. One of the approaches to solve this problem is to establish priorities leading to the emergence of objectives hierarchy (basic, intermediate and accessory), which represents a tree of goals. In that situation, there is the necessity to find the compromise solutions, which can take into account different targets of the company’s functioning.

Thus, regardless the established priority strategic goal, the level of company's income is one of the key indicators of its financial prosperity and the necessary condition of stable functioning in the future. The greater the amount of income and level of capitalization, the more net asset value increases and, as a result, the entity's market value is growing. Therefore, the level of income should be high enough in the strategic period to maintain the level of enterprise's financial potential (in order to maximize the revenues from sales, market value, added value or any other priority indicator the management can allow to reduce the income in the current period only within certain limits – to that extent which does not permit income decrease so much that enterprise will be left without means of growth and activity expansion). Based on this the financial results’ strategic analysis should be performed to determine the accordance of income obtained and the strategic objectives of the company, to investigate the mechanism of income formation taking into account all the diversity of economic activity causation and the influence of environmental factors. Thus, income is a complex economic category; its investigation requires the introduction of a systematic integrated approach.

The methodological principles of the scientific cognition should provide a systematic investigation of the object taking into consideration all the variety of relationships, interactions in both statics and dynamics. In accordance to the logic and methodology of scientific cognition, the main structural elements of the income strategic analysis are purpose, tasks, object of investigation, the indicators, factors, methods of study, the subjects of analysis, sources of incoming and outgoing information.

The purpose of the income strategic analysis is to substantiate the optimal financial strategy of financial results increase in terms of instability on the basis of evaluation of the current and future financial potential, the factors of the external and internal environment, the levels of business risk in order to optimize company’s business parameters by the criterion of the market value maximization in a strategic perspective. To achieve the purpose such tasks are established: the diagnostics and evaluation of the factors of external and internal environment determining the company's financial prospects; the justification and coordination of enterprise's
financial goals and objectives for their achievement according to changes in the external and internal environment; the financial strategy formulation in order to achieve the defined goals; the assessment of risk and uncertainty influence on the business activity’s prospects; the evaluation of the level and dynamics of the income according to providing the achievement of enterprise’s strategic objectives, the investigation of factors impact on the level of profitability; the development of the measures system to implement strategies ensuring the company's functioning in the strategic perspective; control over the implementation of enterprise’s strategy, the evaluation of its effectiveness and the strategic priorities adjustments taking into account changes in the environment to ensure timely adaptation.

The object of strategic financial analysis of income is the level, structure and dynamics of revenues, expenses and financial results from the various types of activities, the level of financial and business risk, the value and structure of capital from the standpoint of sufficiency and optimality to generate income in a strategic perspective.

Since the investigation of the strategic financial analysis’ object is conducted through the system of information, the substantiation of the indicators’ system is significant [22, p. 76]. The implementation of the systematic approach to the creation of the indicators’ system of strategic analysis permits to divide them into subsystems and to determine the composition of each subsystem for representation the actually existing causal relationships. The sequence of indicators’ system formation has to correspond with the logic of the income formation process and includes the following units: the indicators of the external environment, the absolute indicators of financial results, the profitability ratios, the business activity indicator, the indicators of the risk (Fig. 1).

Since the strategic analysis of income has to be a continuing process at all stages of the capital, circulation to create the indicators’ system it is necessary to take into consideration that there are indissoluble dependence and conditionality between profitability and capital structure. On the one side, the value and structure of capital formed as the result of past activities are determining the possibility of the company's functioning and development (the efficiency of available resources utilization, the validity of managerial decisions concerning funding policy, loan capital attraction, selection of investment areas determine the level of future (potential) income). On the other side, the obtained income affects the capital structure, because it leads to the undivided profit increase and, as the result, to the company’s own capital growth; this has a positive impact on the level of financial stability and enterprise’s investment attractiveness.

Therefore, there is the necessity to develop the approach to financial leverage investigation which allows to make the deterministic assessment of the relationship among the level of company’s profitability, the capital structure and financial risk. The effect of financial leverage means the loan capital utilization which affects the profitability of own capital and creates the opportunity to obtain additional profit on the company’s own capital. The following formula is used to determine the effect of financial leverage:

\[ E = \frac{\text{OC}}{\text{LC}} \times (P_a - r) \times (1 - t), \]  

where \( E \) – the effect of financial leverage, \( \text{LC} \) – the average value of loan capital, \( \text{OC} \) – the average value of own capital, \( P_a \) – the operational profitability of assets, \( r \) – the average interest on loan capital, \( t \) – the level of income tax, \( \frac{\text{LC}}{\text{OC}} \) – the coefficient of capital structure, \( (P_a - r) \) – the differential of financial leverage, \( (1 - t) \) – fiscal correction.

Consequently, financial leverage is the potential opportunity to affect the net income by the modification of the long-term liabilities structure and by the variation of own and borrowed funds ratios in order to optimize interest payments. Incidentally, the loan capital utilization effects on the level of tax payments. The problem of the loan capital attraction expediency is directly associated with the effect of financial leverage: the profitability of own capital can be increased through the growth of loan capital share. It is obvious that if the level of operational profitability of assets exceeds the average interest on loan capital then the financial leverage increase leads to the own capital profitability growth.

Although this statement is understandable on an intuitive level, for its formalization it is necessary to transform the formula of the own capital profitability (\( P_{0C} \)):

\[ P_{0C} = \frac{\text{NI}}{\text{OC}} = \frac{i \cdot (1 - t) \cdot (\text{LC} + \text{OC})}{\text{OC}} = \frac{i \cdot (1 - t) \cdot \text{OC}}{\text{OC}} - (1 - t) \times \frac{\text{LC}}{\text{OC}}, \]  

where \( \text{NI} \) – net income, \( i \) – the income before interest and taxes.

Taking into account that \( \frac{i \cdot (1 - t)}{\text{OC} + \text{LC}} = P_c \) – is the adjusted profitability of assets (capital) before interest we obtain:

\[ P_{0C} = P_c \times \frac{(\text{OC} + \text{LC})}{\text{OC}} - (1 - t) \times \frac{\text{LC}}{\text{OC}} = P_c + P_c \times \frac{\text{LC}}{\text{OC}} - (1 - t) \times \frac{\text{LC}}{\text{OC}} = P_c + \frac{\text{LC}}{\text{OC}} \times [P_c - (1 - t) \times r] = P_c + \frac{\text{LC}}{\text{OC}} \times (P_c - \frac{r \cdot \text{LC}}{i}), \]  

where \( i \) – the adjusted average rate of interest on loan capital.


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The obtained algorithm of the own capital profitability (3) is very informative as it shows that the effect of financial leverage, which is defined by the ratio of equity and debt, depends on the level of \( P \) and \( i \). If the level of adjusted profitability of assets (capital) before interest is higher than the level of adjusted average rate of interest on loan capital, the enterprise will receive income from invested capital bigger than payments to creditors. It is established that the enterprise has no ability to attract loan if the level of adjusted profitability of assets (capital) before interest is lower than the level of adjusted average rate of interest on loan capital. The effect of financial leverage is calculated for the flour-and-cereals industry's enterprises to reflect the impact of interest rate and capital structure on return on the own capital profitability (table 1). The determination of the average interest on loan capital depends on the fact that some of its components are free of interests' payment.

Thus, among the companies under investigation the effect of financial leverage is positive for SC "Nepolokovetskyj KKhP" because there are no "paid" funding sources in the loan capital structure (the average interest on loan capital is 0%). The negative effect of financial leverage for PrC "Rivne-boroshno" suggests that the capital structure is inefficient and affects negatively the net income and financial position in general.
Table 1. The evaluation of the effect of financial leverage of the flour-and-cereals industry enterprises

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators</th>
<th>SC &quot;Nepolokovetsky KKhP&quot;</th>
<th>PrC &quot;Rivne-boroshno&quot;</th>
<th>PrC &quot;Korsun-Shevchenkivske khlibopryjamne pidpriyemstvo&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The average capital value, thousand hryvnias including:</td>
<td>23773,5</td>
<td>68121,5</td>
<td>284319,5</td>
</tr>
<tr>
<td>1.1</td>
<td>The own capital</td>
<td>22701,5</td>
<td>18476,5</td>
<td>174117,5</td>
</tr>
<tr>
<td>1.2</td>
<td>The loan capital</td>
<td>1072</td>
<td>49645</td>
<td>110202</td>
</tr>
<tr>
<td>2</td>
<td>The operational income, thousand hryvnias</td>
<td>1104</td>
<td>10651</td>
<td>41963</td>
</tr>
<tr>
<td>3</td>
<td>The income before interest and taxes, thousand hryvnias</td>
<td>1104</td>
<td>9390</td>
<td>39189</td>
</tr>
<tr>
<td>4</td>
<td>The financial expenses, thousand hryvnias</td>
<td>0</td>
<td>7075</td>
<td>3134</td>
</tr>
<tr>
<td>5</td>
<td>The income before taxes, thousand hryvnias</td>
<td>1104</td>
<td>2315</td>
<td>36055</td>
</tr>
<tr>
<td>6</td>
<td>The net income (according to accounting data), thousand hryvnias</td>
<td>905</td>
<td>1898</td>
<td>29565</td>
</tr>
<tr>
<td>7</td>
<td>The operational profitability of assets</td>
<td>0,0464</td>
<td>0,1564</td>
<td>0,1476</td>
</tr>
<tr>
<td>8</td>
<td>The average interest on loan capital</td>
<td>0,0000</td>
<td>0,1425</td>
<td>0,0284</td>
</tr>
<tr>
<td>9</td>
<td>The level of income tax</td>
<td>0,1800</td>
<td>0,1800</td>
<td>0,1800</td>
</tr>
<tr>
<td>10</td>
<td>The coefficient of capital structure</td>
<td>0,0472</td>
<td>2,6869</td>
<td>0,6329</td>
</tr>
<tr>
<td>11</td>
<td>The differential of financial leverage</td>
<td>0,0464</td>
<td>0,0138</td>
<td>0,1192</td>
</tr>
<tr>
<td>12</td>
<td>Fiscal correction</td>
<td>0,8200</td>
<td>0,8200</td>
<td>0,8200</td>
</tr>
<tr>
<td>13</td>
<td>The effect of financial leverage</td>
<td>0,0018</td>
<td>0,0305</td>
<td>0,0618</td>
</tr>
<tr>
<td>14</td>
<td>The adjusted profitability of assets before interest</td>
<td>0,0381</td>
<td>0,1130</td>
<td>0,1130</td>
</tr>
<tr>
<td>15</td>
<td>The adjusted average rate of interest on loan capital</td>
<td>0,0000</td>
<td>0,1169</td>
<td>0,0233</td>
</tr>
<tr>
<td>16</td>
<td>The difference between the adjusted profitability of assets before interest and the adjusted average rate of interest on loan capital</td>
<td>0,0381</td>
<td>-0,0038</td>
<td>0,0897</td>
</tr>
<tr>
<td>17</td>
<td>The profitability of own capital</td>
<td>0,0399</td>
<td>0,1027</td>
<td>0,1698</td>
</tr>
</tbody>
</table>

Source: calculated by the authors on the basis of [23]

The model (3) can also be used to analyze the company's ability to attract additional amount of loan capital to expand operational activity. This justification requires to assess the future level of adjusted profitability of assets before interest. The statistical methods of interval data can be used to determine the value of unknown variables. They also are used for the risk assessment. To achieve this goal it is necessary to move from function described (in the terms of mathematics) by infinitely large number of parameters to their small amount (often such characteristics of random variable are used: mathematical expectation, variance and average quadratic deviation). The point estimate of the mathematical expectation according to the law of large numbers is the arithmetic average of sample (X̄). Incidentally, other valuation can be used in some cases. Thus, if the distribution is symmetrical relative to its center, the center of distribution is not only the mathematical expectation, but also the median, and, therefore, for its evaluation, sample median can be used.

Nonparametric lower limit of the mathematical expectation confidence interval is [24, p. 68]:

\[ X̄ - U(p)s_0/n^{1/2} \]  

where X̄ - the sample arithmetic average; p - confidence probability (the true value of mathematical expectation is between the lower confidence limit and upper confidence limit with probability equal p); s_0 - sample standard deviation; U(p) - the number specified by equality \( F(U(p)) = (1 + p)/2 \), where \( F(x) \) - standard normal distribution function with mathematical expectation 0 and variance 1 (for example, if p=95% then \( U(p) = 1,96 \)).

Nonparametric upper limit of the mathematical expectation confidence interval is:

\[ X̄ + U(p)s_0/n^{1/2} \]  

where \( X̄ \) - the sample arithmetic average; p - confidence probability (the true value of mathematical expectation is between the lower confidence limit and upper confidence limit with probability equal p); s_0 - sample standard deviation; U(p) - the number specified by equality \( F(U(p)) = (1 + p)/2 \), where \( F(x) \) - standard normal distribution function with mathematical expectation 0 and variance 1 (for example, if p=95% then \( U(p) = 1,96 \)).
To evaluate the confidence interval of the adjusted profitability of assets (capital) before interest mathematical expectation we used the data of SC "Nepolokovetskyj KKhP" for 2011-2015 pp. As the result of the estimation it is established that the mathematical expectation of this indicator with 95% probability is in the interval [0.0198; 0.0327].

In accordance to interval paradigm for the selected criteria of effectiveness there is a opportunity to obtain a negative result determined as r, 0≤r≤1. The concept of "opportunity" is similar to the concept of "probability", but it is not based on the coincidence hypothesis and does not establish the probability density in the interval of uncertainty. So, we can agree with A. P. Voloshin [25, p. 104] that at a given uncertainty interval of the efficiency criterion (the adjusted profitability of assets (capital) before interest (x)) [x_min, x_max] the risk is evaluated by the formula:

\[ r_{y < C} = \begin{cases} 0 & \text{for } x_{\min} > C, \\ (C - y_{\min})/(x_{\max} - x_{\min}) & \text{for } y_{\min} \leq C \leq y_{\max}, \\ 1 & \text{for } x_{\max} < C. \end{cases} \]  \hspace{1cm} (6)

where C – the critical value of x.

The average interest rate on new loans for the industry [26] is used to predict the additional loan amount in order to expand operational activity; the adjusted average rate of interest on loan capital is defined as the critical value of the adjusted profitability of assets (capital) before interest (table 2).

### Table 2. The strategic alternatives of the capital profitability considering risk

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators</th>
<th>Variant 1</th>
<th>Variant 2</th>
<th>Variant 3</th>
<th>Variant 4</th>
<th>Variant 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The average capital value, thousand hryvnias</td>
<td>23773,5</td>
<td>23951,5</td>
<td>24001,5</td>
<td>24051,5</td>
<td>24101,5</td>
</tr>
<tr>
<td></td>
<td>including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The own capital</td>
<td>22701,5</td>
<td>22701,5</td>
<td>22701,5</td>
<td>22701,5</td>
<td>22701,5</td>
</tr>
<tr>
<td>1.1</td>
<td>The loan capital</td>
<td>1072</td>
<td>1250</td>
<td>1300</td>
<td>1350</td>
<td>1400</td>
</tr>
<tr>
<td>2</td>
<td>The additional attraction of loan, thousand hryvnias</td>
<td>0</td>
<td>178</td>
<td>228</td>
<td>278</td>
<td>328</td>
</tr>
<tr>
<td>3</td>
<td>The interest rate on the new loan</td>
<td>0</td>
<td>0,1767</td>
<td>0,1767</td>
<td>0,1767</td>
<td>0,1767</td>
</tr>
<tr>
<td>4</td>
<td>The financial expenses, thousand hryvnias</td>
<td>0</td>
<td>31,45</td>
<td>40,29</td>
<td>49,12</td>
<td>57,96</td>
</tr>
<tr>
<td>5</td>
<td>The average interest on loan capital</td>
<td>0</td>
<td>0,0252</td>
<td>0,0310</td>
<td>0,0364</td>
<td>0,0414</td>
</tr>
<tr>
<td>6</td>
<td>The coefficient of capital structure</td>
<td>0,0472</td>
<td>0,0551</td>
<td>0,0573</td>
<td>0,0595</td>
<td>0,0617</td>
</tr>
<tr>
<td>7</td>
<td>The level of income tax</td>
<td>0,18</td>
<td>0,18</td>
<td>0,18</td>
<td>0,18</td>
<td>0,18</td>
</tr>
<tr>
<td>8</td>
<td>The adjusted profitability of assets before interest (the mathematical expectation)</td>
<td>[0,0198; 0,0327]</td>
<td>[0,0198; 0,0327]</td>
<td>[0,0198; 0,0327]</td>
<td>[0,0198; 0,0327]</td>
<td>[0,0198; 0,0327]</td>
</tr>
<tr>
<td>9</td>
<td>The adjusted average rate of interest on loan capital</td>
<td>0</td>
<td>0,0206</td>
<td>0,0254</td>
<td>0,0298</td>
<td>0,0339</td>
</tr>
<tr>
<td>10</td>
<td>The difference between the adjusted profitability of assets before interest and the adjusted average rate of interest on loan capital</td>
<td>[0,0198; 0,0327]</td>
<td>[-0,0008; 0,0121]</td>
<td>[-0,0056; 0,0073]</td>
<td>[-0,01; 0,0029]</td>
<td>[-0,0141; -0,0012]</td>
</tr>
<tr>
<td>11</td>
<td>The profitability of own capital</td>
<td>[0,01817; 0,0312]</td>
<td>[0,0199; 0,0320]</td>
<td>[0,0204; 0,0325]</td>
<td>[0,0207; 0,0328]</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>The risk level, %</td>
<td>0</td>
<td>6,46</td>
<td>43,51</td>
<td>77,81</td>
<td>&gt;100</td>
</tr>
</tbody>
</table>

Source: calculated by the authors.

Thus, according to the results of the computation there is causality between the profitability of own capital and the level of financial risk: if the level of financial risk increases the limits of the profitability of own capital mathematical expectation change (the lower limit is increasing from 0,01817 to 0,0207, and upper limit – from 0,0312 to 0,0328) because of the effect of financial leverage. The additional attraction of loan capital (variants 2-
3) is theoretically possible to improve the efficiency of capital utilization of the company under investigation. However, the amount of profit from investment in the operational activity should not to be less than the financial expenses to maintain the level of own capital profitability. This will facilitate to obtain so-called “point of indifference” in attracting the additional debt. In addition, the point of indifference for two alternative ways of funding has the following mathematical interpretation to compare different variants of funding increase by the equity and debt attraction:

\[
\frac{(t^*_1 - A_1)(3-t)}{oc_1} = \frac{(t^*_2 - A_2)(3-t)}{oc_2},
\]

where \(t^*\) – the point of indifference for two alternative ways of funding, \(A\) – the annual amount of financial costs or dividends on preferred shares before tax for alternative ways of funding.

Conclusions

On the bases of the theoretical generalization and new problem solving of the strategic analysis of income its methodology considering risk and uncertainty is developed in the article. In accordance to the logic and methodology of scientific investigation the composition of the basic structural elements of the income strategic analysis is substantiated and their essence is discussed. Each of the structural elements is considered as a factor of effective influence on the system of strategic financial analysis. This approach to the main income strategic analysis’ elements argumentation allows to improve its methodological principles and creates preconditions for its implementation in practice of domestic enterprises.

The prospects for further research are to develop the methodology of the strategic analysis of capital on the basis of systematic approach and to elaborate the model of capital optimization for flour-cereals industry’s enterprises.

References

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