

**Grosul V. A.**

*Doctor of Economics, Professor, Head of the Department of Economics and Management,  
Kharkiv State University of Food Technologies and Trade, Ukraine;  
e-mail: viktoriagrosul@gmail.com; ORCID ID: 0000-0002-2019-3853*

**Mkrtchan T. M.**

*Doctor of Economics, Associate Professor,  
Dean of Faculty of Marketing and Business Organization,  
Armenian State University of Economics, Yerevan, Armenia,  
e-mail: tmkrtchyan@mail.ru; ORCID ID: 0000-0003-2057-8590*

**Zubkov S.O.**

*Ph.D. in Economics, Associate Professor,  
Associate Professor of the Department of Economics and Management  
Kharkiv State University of Food Technology and Trade, Ukraine;  
e-mail: s.zubkov@hduht.edu.ua; ORCID ID: 0000-0002-4892-8284*

**Karapetyan N. N.**

*Armenian State University of Economics, Yerevan, Armenia,  
e-mail: karapetyan.narek.9618@gmail.com; ORCID ID: 0000-0003-4978-6107*

### **COMPLEX BUSINESS SOLUTIONS ON RISK ASSESSMENT AND MANAGEMENT IN RETAIL**

**Abstract.** Retail companies are largely addicted to the risk of economic activity due to their industry specifics, which requires them to focus on a comprehensive study of the problem of risk. The purpose of the article is to investigate the operational and financial leverage in terms of using its capabilities to manage the risks of the retail company. The task, the decision of which is aimed at researching this article, is to improve the methodical tools of integrated assessment and risk management in the economic cycle of retail companies in the process of asset conversion. The research of the conditions for the formation of operational and financial leverage in retail companies showed that the calculation of analytical indicators for their assessment has methodological features, due to the structure and nature of used material and financial resources, as well as the formation of effective indicators of economic activity. Under research, it was confirmed the hypothesis of the possibility of comprehensive assessment and risk management of retail companies on the basis of analysis of the variability of profit and the impact on the process of its risks' generating associated with the use efficiency of assets and capital of the enterprise by calculating the combined effect of the operational and financial leverage. For the reasoned adoption of effective business decisions and ensuring the comprehensiveness of risk assessment and risk management in retail, the proposed methodological approach, which involves the calculation of the cumulative effect of operational and financial leverage, as well as its components, adapted to the specifics of the retail. The research of combined operational and financial risk using the proposed scientific methodological approach has confirmed its effectiveness and correctness of the hypothesis about the need to reflect in the analytical calculations of use in the trade and technological process of retail companies operating lease objects and the value of trade payables.

**Keywords:** risk, retail, operating leverage, financial leverage, business, decision, management, complexity.

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**Гросул В. А.**

*доктор економічних наук,  
завідувач кафедри економіки та управління,  
Харківський державний університет харчування та торгівлі, Україна;  
e-mail: viktoriagrosul@gmail.com; ORCID ID: 00000-0002-2019-3853*

**Мкртчян Т. М.**

доктор економічних наук, доцент,  
декан факультету маркетингу та організації бізнесу  
Вірменський державний економічний університет, м. Єреван, Вірменія;  
e-mail: tmkrtchyan@mail.ru; ORCID ID: 0000-0003-2057-8590

**Зубков С. О.**

кандидат економічних наук, доцент кафедри економіки та управління,  
Харківський державний університет харчування та торгівлі, Україна;  
e-mail: s.zubkov@hduht.edu.ua; ORCID ID: 0000-0002-4892-8284

**Карапєтян Н. Н.**

Вірменський державний економічний університет, м. Єреван, Вірменія;  
e-mail: karapetyan.narek.9618@gmail.com; ORCID ID: 0000-0003-4978-6107

### **КОМПЛЕКСНІ БІЗНЕС-РІШЕННЯ З ОЦІНКИ ТА УПРАВЛІННЯ РИЗИКОМ У РИТЕЙЛІ**

**Анотація.** Підприємства ритейлу значною мірою схильні до ризику господарської діяльності в силу галузевої специфіки, яка вимагає від них зосередження уваги на всебічному вивченні проблеми ризику. Мета статті полягає в дослідженні операційно-фінансового левериджу з точки зору використання його можливостей для управління ризиками підприємства ритейлу. Завдання, на вирішення якого спрямовано дослідження даної статті полягає у вдосконаленні методичного інструментарію комплексної оцінки та управління ризиком в господарському циклі підприємств ритейлу в процесі конверсії активів. Дослідження умов формування операційного і фінансового левериджів в підприємствах ритейлу показало, що розрахунок аналітичних показників для їх оцінки має методичні особливості, обумовлені складом та характером використовуваних матеріальних і фінансових ресурсів, а також формуванням результативних показників господарської діяльності. У процесі досліджень була підтверджена гіпотеза можливості комплексної оцінки й управління ризиком підприємств ритейлу на основі аналізу варіабельності прибутку та впливу на процес його генерування ризиків, пов'язаних з ефективністю використання активів і капіталу підприємства шляхом розрахунку сполученого ефекту операційно-фінансового левериджу. Для обґрунтованого прийняття ефективних бізнес-рішень і забезпечення комплексності оцінки та управління ризиком в ритейлі запропонований науково-методичний підхід, який передбачає розрахунок сукупного ефекту операційного та фінансового левериджу, а також його складових, адаптований до специфіки ритейлу. Дослідження сукупного операційно-фінансового ризику з використанням запропонованого науково-методичного підходу підтвердило його ефективність і правильність висунутої гіпотези щодо необхідності відображення в аналітичних розрахунках використання в торгово-технологічному процесі підприємств ритейлу об'єктів оперативної оренди та вартості кредиторської заборгованості товарного характеру.

**Ключові слова:** ризик, ритейл, операційний леверидж, фінансовий леверидж, бізнес, рішення, управління, комплексність.

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**Гросул В. А.**

доктор економічних наук, професор,  
заведуюча кафедрою економіки и управления,  
Харьковский государственный университет питания и торговли, Украина;  
e-mail: viktoriagrosul@gmail.com; ORCID ID: 0000-0002-2019-3853

**Мкртчян Т. М.**

доктор экономических наук, доцент,  
декан факультета маркетинга и организации бизнеса,  
Армянский государственный экономический университет, г. Ереван, Армения;  
e-mail: tmkrtchyan@mail.ru; ORCID ID: 0000-0003-2057-8590

**Зубков С.А.**

*кандидат экономических наук, доцент, доцент кафедры экономики и управления,  
Харьковский государственный университет питания и торговли, Украина;  
e-mail: s.zubkov@hduht.edu.ua; ORCID ID: 0000-0002-4892-8284*

**Карпетян Н.Н.**

*Армянский государственный экономический университет, г. Ереван, Армения;  
e-mail: karapetyan.narek.9618@gmail.com; ORCID ID: 0000-0003-4978-6107*

## **КОМПЛЕКСНЫЕ БИЗНЕС-РЕШЕНИЯ ПО ОЦЕНКЕ И УПРАВЛЕНИЮ РИСКОМ В РИТЕЙЛЕ**

**Аннотация.** В статье обоснован научно-методический подход к комплексной оценке и управлению риском с использованием методического инструментария расчета совокупного эффекта операционно-финансового левеиджа. Определены особенности формирования совокупного эффекта операционно-финансового левеиджа в ритейле и предложена адаптированная модель его расчета с учетом отраслевой специфики. Подтверждена эффективность предложенного научно-методического подхода и правильность выдвинутой гипотезы относительно необходимости отражения в аналитических расчетах использования в торгово-технологическом процессе предприятий ритейла объектов оперативной аренды и стоимости кредиторской задолженности товарного характера.

**Ключевые слова:** риск, ритейл, операционный левеидж, финансовый левеидж, бизнес, решение, управления, комплексность.

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**Introduction.** The entrepreneurial risk, being an objective phenomenon in a market economy, can provide economic agents both a growth and a decrease in incomes and profits. In practice, the negative effects of risk deserve and attract more attention, as they can be expressed not only in causing direct damage or loss, but also in undesirable deviations from the goal, irreversible and irreversible worsening of performance indicators of economic activity. That's why there are a lot of problems associated with the assessment and methods of complex impact on the risk caused by ineffective conversion of assets, that is, the risk of economic cycle of an enterprise as a whole. To ensure the adequacy of the research of risk in retail, it is necessary to take into account the specifics of this area of activity.

**Analysis of research and problem statement.** The retail companies are largely at risk of economic activity due to sector specificity, which requires them to focus on a comprehensive research of the problem of risk.

Previous researches to substantiate the relationship between the operating lever and risk are given in researches [1, 2]. J. Mandelker and S. Rea were the first who studied the impact of operational and financial leverage on the level of systematic risk [3]. O'Brien T. and Wanderhein P. proposed an alternative variant of the calculation of level of the financial lever [4]. The choice of calculating methods of operating leverage between the approaches of J. Mandelker and S. Rea and T. O'Brien and P. Wanderhein was researched in the work of S. Stalk, S. Park, and M. Dugan [5]. Later, S. Stalk, S. Park, and S. Medcalf substantiate the choice of methods for calculating the level of the financial leverage in assessment of systematic risks [6]. Sarkar S. outlines the optimal level of the company's operating leverage with flexibility in investing and manufacturing [7]. Prezas A. studies the impact of debt on the level of operational and financial leverage [8]. Following studies do not empirically consider the possible effects arising in the trading area. Only few works are devoted to various aspects of risk management in trading, in particular N. Ildar researches the international practice of implementing a risk management system in retail commercial networks [9]. J. Fan and M. Stevenson comprehensively research the risk management in supply networks [10]. The assessment of financial and operational risks in the management system for overcoming crises in the retail sale is considered in the article of N. Kotseruba [11].

The analysis of publications on the risk problem has revealed the ambiguity in the interpretation of its content, characteristics of its features, properties and elements, approaches to evaluation and management. The theoretical and applied researches on risk are not enough and do not differ by the complexity of the problem solving. At the same time, the issues related to retail risk are exacerbated and, in many cases, do not find solutions, what requires the deepening of the theoretical and methodological foundations due to the specifics of the complex manifestation of risk in trading and the expansion of practical recommendations, respectively, to the logic of the enterprises' operation in the industry.

The purpose of the article is to investigate the operational and financial leverage in terms of using its capabilities to manage the risks of retail trading. The task, the decision of which is aimed at research of this article is: the improvement of methodical tools of integrated assessment and risk management in the economic cycle of retail enterprises in the process of asset conversion.

**Research results.** The trade is a high-risk branch due to the tasks and functions it performs. The specifics of the activities of retail companies are manifested, above all, in the fact that the efficiency of their functioning depends largely on the state of the consumer market, which is very dynamic due to fluctuations in price and market conditions, rapid changes in the needs and tastes of the population; high rate of capital turnover, which causes an increased degree of uncertainty and, consequently, a risk. The combination of significant intra-industry competition and competition in the stakeholders markets is also contributing to the risk increase.

The risks' research of retail companies using the expert estimation method by the pair comparison method has made it possible to identify the risks that are used as an object in further researches (Table 1). According to the experts, competent executives and industry professionals, the most relevant from the point of view of integrated risk management are internal risks that head the operational and financial risks.

Table 1

Risk distribution according to the relevance degree from the position of integrated management on the basis of a generalized matrix of expert survey of specialists in the retail field

Type of risk	Private assessments of significance based on the results of opinions of individual experts $H_{ij}$						The final significance
	$\alpha_{1i}$	$K_{1i}$	$\alpha_{2i}$	$K_{2i}$	$ K_{2i}-K_{1i} $	$\alpha_{3i}$	$K_{3i}$
Financial	138,5	0,173	14,88	0,156	0,017	14,79	0,158
Operational	137,0	0,171	14,77	0,155	0,016	14,67	0,157
Formation and resource adequacy	100,0	0,125	11,75	0,123	0,002	11,52	0,123
Marketing	95,5	0,119	11,95	0,125	0,006	11,64	0,124
Unsatisfactory management	92,0	0,115	11,20	0,117	0,002	10,91	0,117
Organizational	89,5	0,112	11,16	0,117	0,005	10,85	0,116
Technical and technological	65,0	0,081	8,45	0,088	0,007	8,14	0,087
Market	39,0	0,049	5,48	0,057	0,009	5,27	0,056
Macroeconomic	31,0	0,039	4,29	0,045	0,006	4,14	0,044
Social and political	12,5	0,016	1,67	0,017	0,002	1,66	0,018
Total	800,0	1,000	95,61	1,000	-	93,58	1,000

Source: Own authors' calculation

One of the hypotheses of our research is the ability to develop effective business solutions to prevent / minimize the risks of operational and financial activity of retail companies using methodical tools for calculating the cumulative effect of operational and financial leverage [3, 12, 13]. This hypothesis is based on conceptual studies of relationship of risk and profit. In economic literature, profits are treated as the main objective of entrepreneurship as the basis of economic development of the state, as an efficiency criterion, as the main internal source for the formation of financial resources and the growth of the market value of the enterprise, as a source of satisfaction

of social needs of society, as the main protective mechanism against the threat of bankruptcy of the enterprise and so on [14-16]. The direct relation to risk, in our opinion, has the following profit properties.

Being a criterion for the effectiveness of a specific type of activity, the profits availability in sufficient volumes and its stable growth rates indicate the high efficiency of using the resources available at the enterprise and the internal development potential, and the reverse process indicates about the possible risk of not covering the incurred costs, the occurrence of losses and the high probability of bankruptcy. Another risk-oriented aspect of profit is that it is the main internal source for the formation of the company's financial resources and the main protective mechanism of bankruptcy. The lower the level of profit generation in the process of economic activity, the more is the need to attract financial resources from external sources and, on other things, on equal terms, – the higher risk of non-fulfillment of debt obligations. Taking into account the considered aspects of profit in the activities of enterprises, as well as fundamental researches, in which the direct dependence of risk and profit was proved [14, 15, 17], with full reason profit can be considered as the main criterion determining the degree of entrepreneurial risk.

The process of profits generating on the one hand is related to the efficiency of the use of the assets owned and managed by the enterprise, on the other – to the structure and efficiency of using funds sources [14, 15]. Thus, the risk of economic activity of enterprises can be represented in the form of interaction of two main elements - production (operational) and financial. Their size and ratio are determined by branch features and economic conditions of enterprise functioning.

Operational risk is reflected in the ratio between the main elements of production cost (costs associated with trading in retail) – variable and constant costs, which are largely conditioned by the volume and structure of the main and negotiable assets and the efficiency of their use. The size of the risk associated with the enterprise in the scientific literature is characterized by the term "operating leverage" [4, 5, 18-20]. In retail, the maintenance of production risks is the risks of trade and technological processes, which are associated with the implementation of a set of operations aimed at acquiring and bringing goods to customers with the corresponding costs of labor, material and financial resources.

The risk caused from the structure of sources of funds is treated as financial [18, 21, 22]. Quantitatively the characteristics of financial risk can be given using the category of financial leverage. The level of financial leverage directly proportional influences the degree of financial risk of enterprise and the required rate of return. The higher the amount of interest payable (on accounts payable), which are mandatory constant costs, the less is net profit. Thus, the higher the level of financial leverage, the higher is the financial risk [15, 21, 22].

The aggregate risk is characterized by the following: operating leverage reflects the effect on the profit of cost structure and volume of activities, and the financial leverage is the relationship between profit and the ratio of own and borrowed capital. The calculation of these two indicators in the complex allows us to research the impact of the financial and economic components of risk, and by influencing these levers to develop effective business decisions on risk management.

The critical analysis of methods for assessing the aggregate risk of enterprise activity has shown that the authors build their arguments on the fact that the net profit of enterprise is largely influenced by the costs of production and financial nature, and on this basis they implement the further research [14-16]. In order to ensure the principle of comparability of results taking into account the specifics of the activities of retail companies, in the system of assessments of total risk, the calculation of the effects of operational and financial leverage and their cumulative effect should be performed according to following formulas 1-3[12]:

$$EOL = \frac{\Delta RCNRI\%}{\Delta RCSV\%}, \quad (1)$$

$$EFL = \frac{\Delta RCNP\%}{\Delta RCNRI\%}, \quad (2)$$

$$\text{CEOFL} = \text{EOL} \times \text{EFL} = \frac{\Delta \text{ЧП}\%}{\Delta \text{ОП}\%}, \quad (3)$$

where CEOFL is the cumulative effect of operational and financial leverage; EOL, EFL – effect of operational, financial leverage;  $\Delta \text{RCNRI}\%$  – rate of change of net result of investment, %;  $\Delta \text{RCSV}\%$  – rate of change in sales volume (turnover), in %;  $\Delta \text{RCNP}\%$  – rate of change in net profit, in %;  $\Delta \text{RCNRI}\%$  – rate of change of net result of investment.

This approach to risk assessment provides an opportunity to analyze the level of risk in the dynamics, as it uses growth rates, as well as the ability to carry out multi-variation calculations of the ratio of effective indicators characterizing the operational and financial aspects of the activities of retail and on the basis of them, with the greatest efficiency to solve the tasks of risk management.

The hypothesis of our research is also the need to adapt the model of calculation SEOFL taking into account the specificity of retail, which is expressed in the specifics of performance indicators of economic activity and the characteristics of formation and use of assets and capital. In order to adequately assess the aggregate operational and financial risk in calculating the net operating result of investments, it is necessary to reflect the fact of use in commercial and technological processes of retail enterprises of operational leases as an element of exploitation of non-current assets and the value of trade payables as an external source of financing and their contribution to cumulative risk. This gives the opportunity to take into account the economic effect that can generate an enterprise in attracting accounts payable and leasing non-current assets.

Because of it, the rent is proposed to consider both the financial costs and as an effect generated by the enterprise and take it into account when calculating the net - the result of investment operation in addition to profits and interest on borrowed capital. This proposal is based on the fact that, if we abstracted from the organizational and legal aspects, the financial and economic aspect of operating lease is similar to renting [23] – a kind of leasing. In international practice, an approach is spread that emphasizes the fact of investing, i.e. the financial, rather than the substantive nature of accounting objects presented in the asset is considered in the asset [24], while the assets of the balance sheet reflect the objects under the control of the enterprise (lease objects, in particular).

The specifics of composition of financial capital in trade are characterized by a significant degree of dependence on external sources of financing, and the borrowed capital is mainly represented not by bank loans and borrowed funds, but its composition is dominated by accounts payable for goods, work, services.

In our opinion, the mechanism of functioning of account payables of goods, its movement and participation in the trade process are similar to short-term borrowed funds in the form of a commercial loan, only without proper documentary registration. It takes part in the financing of the activities of trading enterprises and relates to borrowed sources of financing, its use is associated with certain costs that enterprises bear in attracting this type of resource. Thus, the size and value of trade payables, in our opinion, should be taken into account when calculating the financial and operational leverage of retail enterprises for the estimation of aggregate risk. The cost of servicing accounts payable should be considered as expenses of retail financial enterprises and included in the net result of investments operation. In addition, such property of account payables as the indirect income of an enterprise, which is formed by inflation due to non-indexation of this type of borrowed funds, is very important, resulting in final settlements with creditors being carried out by depreciated money [14, 15].

Analytical calculations of NRIRE for retail companies using leased non-current assets and trade payables are offered by the following formula [23]:

$$\text{NRIRE}_{\text{adapt.}} = \text{GPAOA} + \text{IFL} + \text{FEAP} + \text{II} + \text{AR}, \quad (4)$$

where is  $\text{NRIRE}_{\text{adapt.}}$  – net result of investments of retail enterprises, adapted to the conditions of use of leased non-current assets, UAH, thousand, GPAOA – gross profit amount from operating activities, UAH, thousand, IFL – interest on financial loan, UAH, thousand, FEAP – financial expenses related to the use of accounts payable, UAH, thousand,  $(\text{FEAP} = \frac{(PD \times 360) \times (1 - TR_p)}{PAP} \times AP)$ ; PD – the size of price discount by cash payment for goods, %;  $TR_p$  – tax rate on profit (decimal); PAP is the

period for attracting accounts payable, days.  $\overline{AP}$  – average amount of attracted accounts payables, UAH, thousand.  $\Pi$  – indirect income of enterprise from the payment of depreciated money, UAH, thousand  $\Pi = \overline{AP} \times (1+I) - \overline{AP}$ ; I – the rate of inflation, the share of unit; AR – amount of rent, UAH, thousand.

The research of total operational and financial risk based on the determination of the conjugate effect of operational and financial leverage calculated without taking into account the specifics of the formation of assets and sources of financing on the basis of actual data and using the formula (4), adapted to the features of economics in retail (Table 2), confirmed the correctness of hypothesis about the necessity of reflection in analytical calculations of use in the trade and technological process of enterprises of objects of operation rent and the cost of trade payables.

Table 2

Comprehensive risk assessment of retail companies based on the calculation of combined effect of operational and financial leverage (%)

Indicators	Effect of operational leverage		Effect of financial leverage		The cumulative effect of operational and financial leverages	
	2016/2015	2017/2016	2016/2015	2017/2016	2016/2015	2017/2016
Not taking into account the specifics of retail	-24,06	-9,87	0,24	-0,28	-5,77	2,76
Taking into account the specifics of retail	-32,52	8,65	0,24	-0,28	-7,80	-2,42

Source: authors' own calculations

During researching the elements that form the cumulative effect of operational and financial leverages, there are following features that characterized the retail:

- the effect components of operational and financial leverage – NRIRE and net profit, take different meanings: they can be negative (losses) and tend to decrease or increase losses in dynamics, and an intermediate situation is possible when NRIRE is positive and the net profit is negative. Also, NRIRE and net profit can be positive and have a tendency to increase or decrease;
- a certain number of enterprises have negative values of EOL, EFL, SEOFL what depends on the level of achievement of break-even point and the ratio of dynamics of elements that are part of EOL and EFL;
- by losses, there are various indicators depending on whether the revenue increases or decreases while losses in the dynamics increase or decrease;
- in non-performing enterprises, EOL, EFL and SEOFL indicators can have both negative and positive meanings; in profitable enterprises, EOL, EFL and SEOFL indicators may have negative values depending on the ratio of growth rates (decreases) of their elements.

The main dynamic situations reflecting the possible combinations of the combined effect of operational and financial leverage are given in Table 2.

Situations I - II are typical for enterprises with a negative value of NRIRE. This means that already in the first stage of formation of the final result, the operational activity of enterprises is associated with losses. Regardless of whether gross income is growing or decreasing, the operating costs are ahead of them. Accordingly, financial costs exacerbate the situation, which leads to greater losses. In the dynamics, the negative value of the NRIRE may increase with the growth or decrease of gross income, while, if the dynamics of financial costs follows the dynamics of the NRIRE, the losses are increasing (situation I). The negative value of the NRIRE can also be reduced with the growth or reduction of gross income, if the dynamics of financial costs is opposite of the dynamics of NRIRE (financial costs are reduced), then losses decrease (situation II).

Table 3

Dynamic situations for making complex business decisions on risk assessment and management in retail

Situations	Combination of indicators	Dynamics of indicators	importance (+, -)		importance SEOFL (+, -)	Risk indicator
			EOL	EFL		
I	NRIRE(loss) "-" RCNP(loss) "-"	$\Delta$ GPA% $\uparrow$ ; $\downarrow$ $\Delta$ NRIRE (of loss)% $\uparrow$ ; $\uparrow$ $\Delta$ RCNP (of loss)% $\uparrow$	+; -	+; +	+; -	Loss increases
II	NRIRE(loss) "-" RCNP(loss) "-"	$\Delta$ GPA % $\uparrow$ ; $\downarrow$ $\Delta$ $\Delta$ NRIRE (of loss)% $\uparrow$ ; $\uparrow$ $\Delta$ RCNP(of loss)% $\downarrow$	-; +	+; +	-; +	The loss is reduced
III	NRIRE "+" RCNP(loss) "-"	$\Delta$ GPA % $\uparrow$ ; $\uparrow$ $\Delta$ NRIRE % $\uparrow$ ; $\downarrow$ $\Delta$ RCNP(of loss)% $\uparrow$	+; -	+; -	+; +	Financial cost growth is more than NRIRE growth, increase of loss
IV	NRIRE "+" RCNP(loss) "-"	$\Delta$ GPA % $\downarrow$ ; $\downarrow$ $\Delta$ NRIRE % $\uparrow$ ; $\downarrow$ $\Delta$ RCNP(of loss) % $\downarrow$	-; +	-; +	+; +	Growth in financial costs is less than growth of NRIRE, loss reduction
V	NRIRE "+" RCNP "+"	$\Delta$ GPA % $\uparrow$ ; $\uparrow$ $\Delta$ NRIRE % $\uparrow$ ; $\downarrow$ $\Delta$ RCNP % $\uparrow$	+; -	+; -	+; +	Profit growth
VI	NRIRE "+" RCNP "+"	$\Delta$ GPA % $\downarrow$ ; $\downarrow$ $\Delta$ NRIRE % $\uparrow$ ; $\downarrow$ $\Delta$ RCNP % $\downarrow$	-; +	-; +	+; +	Profit decline

Source: systematized on the basis [25]

Situations III-IV characterized the enterprises, which have positive result of operating activity, but financial costs exceed it, which in general leads to losses. This is typical of enterprises with a significant share of borrowed capital. SEOFL in these situations is an indicator of rate of increase of losses in case of deterioration of the conditions of management and reduction of gross income, and the rates of reduction of losses with the growth of gross income.

Situations V and VI correspond to positive indicators of NRIRE and RCNP, they are common in the economic practice of enterprises.

The peculiarity of the current stage in the operation of retail companies is that, due to considerable uncertainty of the external and internal environment, under the influence of various objective and subjective factors, various situations may develop during each short period of time, for example within the framework of year, replacing each other. A significant number of initial factors describing the researched phenomena from different aspects (operational leverage, financial leverage, and the combined effect of the operational and financial leverage) leads to the need to solve the problem of its description by a smaller number of generalized factors and identifying a stochastic connection between the initial and generalized factors.

**Conclusions.** Retail is an industry characterized by a considerable variety of types of risks and high degree of their impact on economic performance. The research of the conditions for the formation of operational and financial leverage in retail companies has shown that the calculation of analytical indicators for their assessment has methodological features, due to composition and nature of the used material and financial resources and the formation of effective indicators of economic activity.

In the process of research, the hypothesis of the possibility of integrated assessment and risk management of retail enterprises was confirmed on the basis of the analysis of the profitability variability and the impact on the process of generating the risks associated with the efficiency of use



of assets and capital of the enterprise through the calculation of conjugate effect of the operational and financial leverage.

For reasonable decision-making of effective business solutions and to ensure the integrity of risk assessment and management in retail, it is proposed a scientific and methodical approach, which involves calculating the cumulative effect of operational and financial leverage and its components, adapted to the specifics of retail.

The research of combined operational and financial risk using the proposed scientific methodological approach confirmed its effectiveness and correctness of the hypothesis about the necessity of reflection in the analytical calculations of use of operational leases in commercial and technological processes of retail companies and the value of trade payables.

In the future, the results of research will be used to develop a methodology for determining an acceptable level of operational and financial risk in retail companies.

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Зубков С. О., Карапetyан Н. Н.

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Zubkov S.O., Karapetyan N. N.