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ESTIMATION OF FINANCIAL RELIABILITY OF THE INSURANCE COMPANY

ОЦІНКА ФІНАНСОВОЇ НАДІЙНОСТІ СТРАХОВОЇ ОРГАНІЗАЦІЇ

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The article considers the assessment of the financial reliability of the insurance organization. It is shown that the financial reliability of the insurance organization is a comprehensive indicator and depends on a number of factors. The classification of financial reliability factors on the basis of the possibility of management and depending on direct and indirect influence is considered. Approaches to assessing the financial reliability of an insurance organization, which use both single indicators and scorecards, are considered, their advantages and disadvantages are determined. It is shown that the advantage of using integrated indicators is the ease of use and the ability to take into account various factors. To assess the financial reliability of the insurance organization, the use of the Harrington model is recommended and a list of model factors is defined.

Keywords: financial reliability, insurance organization, financial reliability assessment of the insurance organization, integral indicator.

У статті розглянуто оцінку фінансової надійності страхових організацій. Під фінансовою надійністю страховика зазвичай розуміють спроможність страховика виконати страхові зобов'язання, прийняті за договорами страхування та перестраховання у випадку впливу несприятливих чинників. Показано, що фінансова стійкість страхової організації є комплексним показником, який залежить як від внутрішніх, так і від зовнішніх факторів. Розглянуто основні класифікації факторів, які впливають на рівень фінансової стійкості страхової організації: за можливістю управління та в залежності від прямого та опосередкованого впливу. Проаналізовано основні підходи до оцінки фінансової надійності страхової організації. Запропоновані підходи використовують одиничні показники (показник ліквідності, показники платоспроможності, показники перестраховання тощо), системи відносних показників та інтегральні показники. Визначено переваги та недоліки таких підходів. Проаналізовано переваги та недоліки тестів раннього попередження оцінки фінансової надійності страхової організації. Показано, що перевагою застосування інтегральних показників є простота застосування та можливість врахування різноманітних факторів. Однак, при застосуванні інтегральних показників виникають певні складнощі, які пов'язані з тим, що, як правило, в інтегральний показник об'єднуються частинні показники, які мають різну розмірність, тому для їх об'єднання або згортки кожен з частинних показників слід перетворити в безрозмірну величину за допомогою відповідної шкали. Для побудови інтегрального показника оцінки фінансової надійності страхової організації рекомендовано використати метод Харрінгтона та врахувати фактори, які характеризують діяльність страхової організації: внутрішні: (рівень виплат; забезпеченість страховими резервами; участь перестраховика; коефіцієнт платоспроможності; коефіцієнт поточної ліквідності; коефіцієнт перестраховання) та зовнішні, які враховують загальноекономічну ситуацію в країні та ефективність функціонування економіки держави (коефіцієнт інфляції; темпи приросту ВВП).

Ключові слова: фінансова надійність, страхова організація, показники оцінки фінансової надійності страхової організації, інтегральний показник.

В статье рассмотрена оценка финансовой надежности страховой организации. Показано, что финансовая надежность страховой организации является комплексным показателем и зависит от ряда факторов. Рассмотрена классификация факторов финансовой надежности по принципу возможности управления и в зависимости от прямого и непрямого влияния. Рассмотрены подходы к оценке финансовой надежности страховой организации, которые используют как одиночные показатели, так и системы показателей; определены их преимущества и недостатки. Показано, что преимуществом использования интегральных показателей является простота использования и возможность учета различных факторов. Для оценки финансовой надежности страховой организации рекомендовано использование модели Харрингтона и определен перечень факторов модели.

Ключевые слова: финансовая надежность, страховая организация, оценка финансовой надежности страховой организации, интегральный показатель.

Posing a problem. In modern market relations, the requirements for financial reliability of the insurance companies are increased. The insurer, unlike industrial and commercial enterprises, accepts money from the policyholder not in exchange for purely material goods or services, but in exchange for a service that provides insurance protection in the form of future insurance payments only to those who have suffered losses and need financial assistance. This "payment in advance" requires certain guarantees regarding the ability of the insurance company to be responsible for its obligations to insurers. And therefore an adequate assessment of financial reliability of insurance companies becomes a priority.

Analysis of recent researches and publications. A significant contribution to the development of theoretical and methodological principles of assessing the financial reliability of insurance companies was made by Tkachenko N.V. [1], Shirinyan L.V. [2], Malynych G.P. [3] and other scientists.

Most scientists note that the level of financial stability is the main indicator of the viability of the insurance company and its ability to fulfill its financial obligations in the face of the negative impact of external and internal factors. After all, the low level of financial stability of any business entity, including insurance organizations, becomes a factor of its solvency, the reduction of which could lead to bankruptcy. Ensuring the financial viability of an insurance company begins with its thorough and reliable assessment. It should be noted that in most works, either single or relative measures are used to assess the financial reliability of the insurer. But it is the use of complex indicators and mathematical modelling methods that is most appropriate.

The purpose of the article is further development of theoretical provisions and systematization of methodological and practical recommendations for assessing the financial reliability of the insurers.

Presentation of the main material. The insurer financial reliability is the insurer's ability

to fulfill insurance obligations accepted under insurance and reinsurance contracts in case of adverse factors. The study of factors impact solvency and the reliability of the insurance organization involves their different classification in advance. In the most general form, macro level factors can be distinguished, which are realized through the complex interaction of such global factors of market equilibrium as compliance with supply, demand, price expectations and prices, as well as micro leveling factors. In a number of external factors of economic nature, which have a significant impact on the financial reliability of the insurance company, it is necessary to name the dynamics of interest rate, the level of inflation, the state of the securities market and the tax system. Thus, unsuccessful taxation can lead to an outflow of capital from the insurance industry and, with excessive withdrawal of financial resources, make not only individual insurance companies unsustained, but also the insurance market as a whole.

In foreign insurance management, the classification of factors by the possibility of management is actively used (table 1) [1, p. 293–294].

When analyzing the financial environment of the insurance company's functioning, factors of the external financial environment can be highlighted – indirect influence and direct impact, which affect the financial reliability (Table 2) [3].

Consequently, the problem of ensuring the financial stability of the insurance company is a multifactorial task and requires a comprehensive assessment.

Today, in domestic science and practice there is no single approach to the system of indicators of financial reliability of insurance companies. In most methods, it is proposed to evaluate the financial stability of insurance organizations on the basis of a system of indicators of financial stability of any business entity with their adaptation to the insurance industry characteristics.

– Some methodical approaches of assessing the insurance organization financial reliability are based on the calculation of a single reliability indi-

Table 1

Division of factors of financial stability of the insurer into groups by the possibility of management

Internal (Managed)	External (Unmanaged)	Mixed
Quality of insurance portfolio	Market conditions	Insurance reserves
Composition and cost structure, the company's cost strategy	Inflation, time, duration of the reporting period	Statutory fund, its size, structure and composition
Composition and structure of the tariff rate		Insesured system
Guarantee funds of the insurer, participation in centralized reserve funds and voluntary funds of insurance guarantees		The degree of involvement of the insurance organization in investment activities
Insurance organization's net profit strategy		Mobility of the company
Marketing policy and management of the insurance company		Optimal structure of the insurance organization

Table 2

Factors of financial environment determining the financial reliability of the insurance company

External		Internal
Indirect	Direct	
Portfolio exposure and insurance risk	Political situation	Development strategy
Legislation	Conditions of foreign economic activities	State of corporate culture and business reputation
State of insurance market	External economic environment	Financial resources and their management
Competition rate	Action by state and local authorities	Management structure and personnel
Taxation rate	Force majeure	State of the regional network

cator of the insurance company or a set of indicators. The following indicators are offered to assess the financial reliability of the insurance company: current reliability, reliability of reinsurance activities, current liquidity, solvency level, reinsurer participation in insurance organization financial reliability ensuring, the coefficient of movement of insurance reserves, the coefficient of reinsurance etc.

The disadvantages of this approach can be determined in such a way:

1) none of the indicators determines the economic essence of the financial reliability of the insurance company;

2) The proposed indicators do not allow to fully measure the multifaceted reliability of the insurance company, but can only become part of the scorecard. The indicator of current reliability reflects only the loss of the insured amount, and the indicator of reliability of the reinsurance activity of the specific amount in insurance payments transferred to the reinsurance;

3) lack of normative values of indicators does not allow to provide comparability of financial reliability values.

I.O. Kovtun offers a methodology [4, p. 250–255] to assess the financial reliability of the insurance company, which provides the determination of general indicator – the coefficient of financial reliability of the insurance company.

$$K_r = \sqrt[3]{K_l \cdot K_s \cdot K_p} \tag{1}$$

where K_l – liquidity indicator;

K_s – solvency indicator;

K_p – profitability indicator.

The simplicity of its use is the advantage of this technique. The information base for it is the public reporting of the insurance company, which is accessible to all interested parties. However, the presented technique has a number of disadvantages:

1) the algorithm for calculating the solvency coefficient does not take into account the peculiarities of the financial mechanism of the insurance company's functioning. it reflects only the level of equity coverage of insurance reserves, but the insurance company usually also has other obligations (long-term, current);

2) there is no normative value of the financial reliability ratio, which makes it impossible to

make comparisons and deprives the methodology of practical value.

Shikhov A. [5] uses relative indicators of the financial condition of the insurance organization to quantify the financial reliability and solvency of the insurance organization. The methodology for assessing financial reliability, which was proposed by Mudryk D. [6], is based on the structuring of the insurer's capital and considers four indicators (coefficients) of financial reliability.

The values of these coefficients are clearly manifested in dynamics, which gives information on the adjustment of the insurer's operational activity. Thus, the financial reliability of the insurer is estimated as the optimal ratio between the structural elements of the company's capital. However, these techniques have certain advantages and disadvantages.

In order to standardize the procedures for analyzing the activities of insurers, the Recommendations were provided on the analysis of the activities of insurers [7]. According to them, the analysis of capital, assets, reinsurance, insurance reserves, profitability and liquidity is carried out. Based on this method – Early Warning Tests (EWT) – the level of financial reliability of the insurance company is determined. The information support of this methodology is public reporting and the report on the income and expenses of the insurance company, which belongs to the internal reporting. Consequently, the results of early warning tests is the restricted information.

EWT provide for the calculation of eleven indicators for risk insurance companies and nine for life insurance companies. According to EWT, the analysis of capital, assets, insurance, insurance reserves, profitability, liquidity is carried out and an appropriate assessment is provided ("1" – reliable; "2" – satisfactory; "3" – marginal; "4" – unsatisfactory). EWT are universal – used, with certain differences, to assess financial sustainability of both life insurance companies and insurers dealing with other types of insurance.

The next step in EWT is to determine the company's ratings for each of the calculated indicators. To do this, on the basis of the Recommendations for analyzing the activities of insurers, the actual values are compared with the regulatory values established by the regulator, as a result of which the insurer receives an actual assessment in a certain area of financial activity, on their basis there is a calculation of the general assessment of the insurance company's activities for the reporting period. The total estimate received by the insurer is equal to the sum of the products of the actual estimates and coefficients of their significance, which are also established by the regulator.

Thus, in order to ensure greater efficiency of financial sustainability management of the insurance company, it becomes necessary to determine the reserves for its increase, as well as the factors that most affect the level of financial stability.

Table 3

**Approaches to assessing the financial reliability
of the insurer using relative indicators**

Approach uses relative indicators		Approach based on the structuring of the insurer's capital	
Name	The contents of the coefficient	Name	The contents of the coefficient
Equity ratio	Determines the share of equity in the total amount of capital based on the balance sheet.	Kfr ₁	Characterizes the share of equity in all the capital of the insurer.
Attracted capital ratio	Determines the share of funds attracted in the total amount of capital.	Kfr ₂	Characterizes the share of insurance reserves (attracted funds) in the company's capital.
Common liquidity factor	Characterizes the total provision of the insurance organization with working capital to repay short-term liabilities.	Kfr ₃	Reflects the share of borrowed funds in the insurer's capital.
Absolute identity coefficient	Determines the provision of highly liquid assets to fulfill obligations in the current period.	Kfr ₄	Shows the ratio of equity and formed insurance reserves, reflects the adequacy of equity.
The coefficient of provision of own working capital.	Characterizes the financial condition and measure of the insurer's ability to pay at its own expense.		

The actual assessment of each indicator is determined by comparing the estimated value of the indicator with the answer to the bottom of the scale of values.

Early warning tests, as a methodology for assessing the financial reliability of the insurance company among the analyzed, are the most complete, but not without flaws. Among them, in particular:

1) a set of indicators that create a system of indicators for assessing the financial reliability of the insurance company do not reflect the significant properties of the study.

2) in the literature there is no single approach to determining the level of theoretical values of indicators that are components of the general indicator, which requires a thorough analysis of them;

3) the coefficients of importance of a separate indicator in the integral indicator of financial reliability of the insurance company do not take into account the peculiarities of the functioning of the insurer;

4) 4-point assessment system does not allow to take into account the dynamics of the level of financial reliability of the insurance company.

Therefore, one can conclude that the above methods of assessing the financial reliability of the insurance organization have their advantages and disadvantages. However, we consider that the most effective methods provide determining the integral assessment of financial reliability. The construction of a mathematical model for managing the financial reliability of the insurer makes it possible to assess the general trend of changing the level of financial reliability and get the projected value of this indicator for the future period [8]. The advantage of this approach is taking into account both internal and external factors, as well as the use of normalized coefficients, which makes it possible to establish the maximum level of the integral indicator of financial reliability.

However, when applying integral indicators, there are certain difficulties that are associated with the fact that, as a rule, part indicators are combined into the integral indicator, which have different dimensions and are measured in different quantities. Therefore, each of the part indicators should be converted to a dimensionless value using the corresponding scale. To build a scale for each transformed value in the economy, it is recommended to take into account both formal procedures and non-formal procedures based on the preferences of the decision-maker. Many scientists note that based on the system of

advantages, it is possible to build a more meaningful scale of transformed values of part indicators. Given the advantages and disadvantages of various mathematical methods of constructing integral indicators to evaluate the activities of the insurance organization on the basis of a balanced scorecard, Harrington method should be used to build a quality score.

The basic idea of Harrington method for constructing an integral indicator is contained in the development of a generalizing desire function and part functions. Harrington's function scale features registration points divide the entire scale by intervals: $[0; 0,2)$ – very bad, $[0,2; 0,37)$ – bad, $[0,37; 0,63)$ – satisfactory, $[0,63; 0,80)$ – good, $[0,8; 1)$ – excellent. The scale has a range of value changes from zero to one. The E. Harrington transformation function looks like this:

$$y = e^{-e^x}. \quad (2)$$

This function is recommended by many scientists and has such prevailing properties as continuity, monotony and smoothness [1]. It is believed that the scale of readiness is an attempt to formalize the ideas of the person who decides on the importance of certain values of individual indicators. This is a significant disadvantage of the scale, since it depends on the subjectivity of the expert's opinion.

Analyzing the research of domestic and foreign scientists, one could determine the factors that mostly affect the financial reliability of the insurance organization and use them to build the Harrington model. It should be noted that the list of factors may be expanded depending on the available information and research goals. However, the model should not be overloaded.

Let determine the composition of indicators that characterize the financial condition of the insurance organization and divide the indicators into internal and external. Internal indicators are divided into indicators of management level assessment, indicators of solvency and financial stability assessment, indicators of business activity assessment and indicators of market stability assessment. Internal: level of payments; provision of insurance reserves; reinsurer participation; solvency coefficient; current liquidity ratio; coefficient of insurance. External indicators take into account the general economic situation in the country and the effectiveness of the functioning of the state economy: inflation rate; GDP growth rate, since this indicator reflects the productivity of the economy as a whole.

It should be noted that the objectivity of the assessment of the insurance organization's

activities depends on a scientifically based integrated indicator that allows to uniquely determine the level of activity and identify its condition, establish alternative ways of effective functioning and development, as well as the correct and informed choice of factors. Harrington scale and Harrington function are recommended for the scientific basis for the development of the integral indicator of activity evaluation, while the rationing of the values of indicators should be carried out on the basis of the use of optimal values of indicators.

Conclusions. The main and most important scientific and practical results of work are the following: 1. Solving the problem of ensuring the financial stability of the insurance company is a multifactorial task. 2. The approaches of financial reliability of the insurer estimation are determined and their advantages and disadvantages were discussed. 3. To assess the financial reliability of the insurance organization, it is recommended to use an integral indicator obtained with the Harrington model, and the factors of the model have been defined.

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