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#### **DEVELOPING THE METHODOLOGICAL APPROACH TO ASSESSING THE FINANCIAL SECURITY OF INSURANCE MARKET**

**Abstract.** The methodical approach was developed to assess the financial security of the insurance market. This approach takes into account the structural composition of indicators and determined the average, median, mode and figure asymmetric distribution indicators to assess the financial security of insurance market as a monitoring tool to ensure the threat identification.

Author determined that the preferred indicator for assessing the financial security of the insurance market is its market capitalization (share of equity capital in assets), because it can characterize the ability to withstand risks and to cover unexpected losses.

Indicators of financial security of the insurance market of Ukraine during 2004 – 2015 were estimated.

**Keywords:** financial security, insurance market, capital ratios, threat identification, monitoring tools.

**JEL classification:** G22

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#### **РОЗРОБКА МЕТОДИЧНОГО ПІДХОДУ ДО ОЦІНКИ ФІНАНСОВОЇ БЕЗПЕКИ СТРАХОВОГО РИНКУ**

**Анотація.** Розроблено методичний підхід до оцінки фінансової безпеки страхового ринку, який враховує структурний склад індикаторів та визначені значення середнього, медіани, моди та показника асиметричності розподілу індикаторів оцінки фінансової безпеки страхового ринку як моніторингових інструментів для забезпечення ідентифікування загроз.

Визначено, що пріоритетним індикатором для оцінки фінансової безпеки страхового ринку є його капіталізація (частка власного капіталу в активах), оскільки він може характеризувати здатність витримувати ризики та покривати непередбачувані збитки.

Оцінено індикатори фінансової безпеки страхового ринку України за 2004-2015 роки.

**Ключові слова:** фінансова безпека, страховий ринок, показник капіталізації, ідентифікування загроз, моніторингові інструменти.

Табл.: 4; бібл.: 13

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#### **РАЗРАБОТКА МЕТОДИЧЕСКОГО ПОДХОДА К ОЦЕНКЕ ФИНАНСОВОЙ БЕЗОПАСНОСТИ СТРАХОВОГО РЫНКА**

**Аннотация.** Разработан методический подход к оценке финансовой безопасности страхового рынка, который учитывает структурный состав индикаторов и рассчитанные значения среднего, медианы, моды и показателя асимметричности распределения индикаторов оценки финансовой безопасности страхового рынка как мониторинговых инструментов для обеспечения идентификации угроз.

Определено, что приоритетным индикатором для оценки финансовой безопасности страхового рынка является его капитализация (доля собственного капитала в активах), поскольку он может характеризовать способность выдерживать риски и покрывать непредвиденные убытки.

Оценено индикаторы финансовой безопасности страхового рынка Украины за 2004-2015 года.

**Ключевые слова:** финансовая безопасность, страховой рынок, показатель капитализации, идентификации угроз, мониторинговые инструменты.

Табл.: 4; библи.: 13

**Introduction.** The feasibility and actuality of maintenance the financial security of the insurance market due to the fact that establishment of protection of insurance consumers' property interests is impossible without efficient functioning of the market.

The financial security of the insurance market is an important indicator of the insurance market and requires investigation. Among the approaches to improve the efficiency of state regulation and supervision in accordance with the Strategy of reforming state regulation of non-banking financial services markets in 2015 – 2020 [1] defined tasks to ensure the introduction effective system for identifying threats.

The problem that needs solving is ineffective use of methodical approach of assessment of financial security of the insurance market and mechanisms to neutralize, minimize impact and eliminate phenomena and factors leading to the creation of external and internal threats to the financial security of the country as a whole.

**The analysis of research and problem definition.** Conceptual framework to ensure the financial security of the insurer and the insurance market in general studied in the works of national and foreign scientists: Baranovskoho A. I. [2], Hladchuk A. M. [3], Kuzmenko O. V. [4], Nikiforov P. O. [5], Papka O. S. [6, 7], Ruban O. A. [8], Tkachenko N. V. [9], Yermoshenko A. M. [10] and others.

However, the methodical approach to the assessment of financial security of insurance market for threat identification is not developed enough. Therefore, the aim of the study is to develop the methodical approach to assess the financial security of the insurance market.

**The results of the research.** The feasibility and actuality of maintenance the financial security of the insurance market due to the fact that establishment of protection of insurance consumers' property interests is impossible without efficient functioning of the market.

The financial security of the insurance market is an important indicator of the insurance market and requires investigation. However, there are few effective instruments of security threats assessment to Ukrainian insurance market.

The macroeconomic indicators of the insurer's financial security include the following [10]: macroeconomic stability in the country; increase the level of socio-economic development of the regions in the country; inflation expectations and volatility of the currency market; monetary policy in the country; development and stability of the stock market in the country; political stability and legislative development; development of scientific and technical progress; investment climate in the country and the attractiveness of the insurance sector; stability of financial markets; stability of the tax regime.

Author determined indicators to identify threats for assessing the financial security of insurance market in Ukraine based on reports on the status and development of the insurance market and the data on the regulation and supervision of the last one, prepared by the national

regulator, as well as the indicators of financial performance, intensity and effectiveness of state regulation and supervision.

The financial security of insurance market was defined using the analytic hierarchy method by T. Saati that is an instrument of system analysis [11]. The highest priority received a group of indicators that characterize assets charter and equity capital, followed by a group of indicators characterizing the insurance market regarding macroeconomic development of the country, a group of indicators application of prudential and regulatory impact on the insurance market and a group of indicators characterizing insurance activities of insurance companies in the insurance market.

Thus, improvement of the methodical approach to assessment of the financial security of the insurance market, which, unlike the existing ones, takes into account the structural composition of indicators (share of assets of insurers on insurance other than life insurance in total assets, the share of assets of insurance companies for life insurance in total assets, the share of equity capital in assets (rate of capitalization), the proportion of equity capital in assets (rate of capitalization) (non-life); share of equity capital in assets (rate of capitalization) (life), the proportion of paid authorized capital assets, the proportion of paid authorized capital assets (non-life); the share of paid authorized capital assets (life), the share of gross premiums in GDP, the share of gross premiums (non-life) in GDP, the share of gross premiums (life) in GDP, the amount of gross premiums per capita; the amount of gross premiums per capital (non-life); the amount of gross premiums per capital (life); the level of benefits, the level of payments (non-life); the level of benefits (life)) and determined the value of the average, median, mode and rate asymmetry distribution indicators assessing the financial security of the insurance market as a monitoring tool for identifying threats.

Basic indicators of the Ukrainian insurance market for threat identification to the financial security of the insurance market generated based on sources [12, 13].

Difficulties of database analysis of the Ukrainian insurance market confirmed the lack of baseline data for analysis and justification of holding back effective measures to identify threats to the financial security of the insurance market of Ukraine.

The development of the insurance market of Ukraine is closely associated with the use of tools that domestic insurers use to manage low capitalization, including coinsurance and reinsurance services.

The value of reinsurance is shown in protection mechanism of a separate insurance company and the insurance market, because the direct insurer is protected against financial losses incurred would be subject to the need of insurance payments and claims on insurance contracts without reinsurance coverage.

Often reinsurance comes from the country and maintains the required balance in the activities of insurers at the expense abroad. Efficiency of reinsurance usage shows the increase insurers capacity because majority of them is not able to take security very large and expensive risks.

Low priority of indicators on the activity of reinsurance in the insurance market probably could be assessed with quite high requirements for reinsurers residents and nonresidents, for example, the performance of insurance liabilities nonresident reinsurer must be confirmed by its financial stability rating (stability), which should be published in the Bulletin of the international rating agencies or posted on the official websites of the relevant agencies.

According to the author, the preferable indicator for assessing the financial security of the insurance market is its market capitalization (share of equity capital in assets), because it can describe risks impact and coverage of unexpected losses.

To increase the efficiency of insurance market in order to form trends of the financial system of the state and ensure its financial security it is necessary to increase the financial security indicator of the last ones to facilitate the market entry of foreign investors.

The creation of information based on data about levels of instruments operational impact on financial security will enable to assess the impact of decisions to ensure its proper level.

The efficiency of this system depends on the prevention and response, successful management, quality of management decisions and the current level of financial security. To improve the efficiency of the insurance market due to the shaping trends of the financial system of the state and ensuring its financial security it is necessary to increase financial security to facilitate entry of foreign investors to the local market.

Indicators of financial security threats identification for the insurance market shown in Table 1.

Table 1

Indicators of financial security threats identification for the insurance market

Indicator/symbol	Values by years											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	2	3	4	5	6	7	8	9	10	11	12	13
The share of insurers' assets in insurance other than life insurance to total assets (IN),%	96,25	n/a	n/a	n/a	n/a	n/a	81,59	88,78	89,15	89,41	70,32	83,23
The share of insurer' assets for life insurance to the total assets (IL),%	3,75	n/a	n/a	n/a	n/a	n/a	18,41	11,22	10,85	10,59	29,68	16,77
The share of equity capital to assets (capitalization rate) (I),%	58,78	n/a	n/a	n/a	n/a	n/a	57,84	64,16	58,70	60,57	49,24	57,35
The share of equity capital to assets (capitalization rate) (non-life) (IN <sub>1</sub> ),%	n/a	n/a	n/a	n/a	n/a	n/a	65,28	66,25	61,03	63,14	64,84	63,34
The share of equity capital to assets (capitalization rate) (life) (IL <sub>1</sub> ),%	n/a	n/a	n/a	n/a	n/a	n/a	24,88	47,60	39,60	38,82	12,28	27,59
The share of paid shareholders capital to assets (I <sub>1</sub> ),%	27,55	31,98	34,97	33,01	31,50	35,44	31,90	29,28	24,65	23,16	21,52	23,84
The share of paid shareholders capital to assets (non-life) (IN <sub>2</sub> ),%	n/a	n/a	n/a	n/a	n/a	n/a	32,90	29,52	24,55	23,02	24,74	25,59
The share of paid shareholders capital to assets (life) (IL <sub>2</sub> ),%	n/a	n/a	n/a	n/a	n/a	n/a	27,47	27,44	25,51	24,37	13,89	15,10

Continuation of Table 1

The share of gross premiums to GDP (I <sub>2</sub> ),%	5,63	2,91	2,54	2,50	2,53	2,24	2,13	1,74	1,52	1,96	1,71	2,08
The share of gross premiums (non-life) to GDP (IN <sub>3</sub> ),%	5,58	2,84	2,46	2,39	2,42	2,15	2,05	1,64	1,40	1,79	1,57	1,93
The share of gross premiums (life) in GDP (PL <sub>3</sub> ),%	0,05	0,07	0,08	0,11	0,12	0,09	0,08	0,10	0,13	0,17	0,14	0,15
Gross premiums per capital (G <sub>3</sub> ), USD.	409	273	296	387	519	443	503	495	472	630	590	693
Gross premiums per capital (non-life) (IN <sub>4</sub> ) USD.	405	266	286	370	495	425	483	466	432	575	542	642
Gross premiums per capital (life) (IL <sub>4</sub> ) USD.	4	7	10	17	24	18	20	29	40	54	48	51
The level of payments (I <sub>4</sub> ), %	7,93	14,74	18,80	23,39	29,37	32,96	26,45	21,43	23,95	16,23	18,92	27,24
The level of payments (non-life) (IN <sub>5</sub> ), %	7,94	15,04	19,31	24,32	30,61	34,03	27,29	22,45	25,73	17,20	19,61	27,62
The level of payments (life) (IL <sub>5</sub> ), %	6,31	3,02	3,55	3,06	3,44	7,58	5,80	5,24	4,54	6,02	11,08	22,48

n/a - not available.

Source: author's calculation

As it is shown in the Table 1, there is not enough data to calculate the indicators for threats to the insurance market financial security of identification. Only since 2010 the national regulator has made public data on the equity capital of insurers, the share capital and assets of life insurance companies, and other than life insurance companies. Non-life insurance market dominates in the overall structure of the insurance market of Ukraine by the number of companies and the amount of insurance premiums.

Due to data for 2004–2015, the negative trend of Ukrainian insurance market development is the decrease of equity capital to assets proportion, which was noticed since 2014.

Due to the share of gross premiums in GDP author concluded that the insurance industry has the low impact on the economy, especially from the point of growth in gross premiums for the years studied.

The usage of established indicators for security assessment of treat identification of the insurance market requires the development of BarChart measurement for these indicators, because the efficient usage of information requires formalization of information. The indicators used in the evaluation are metric. Based on the calculated values of safety indicators of financial security of the insurance market for the 2004 – 2015 the author suggested using values obtained the mean, median, and mode indicator asymmetry of safety assessment indicators for the insurance market as monitoring tools.

Quantitative indicators assess the safety characteristics of the insurance market are shown in Table 2 – 4.

Table 2

## Quantitative assessment of financial security of the insurance market indicators

Quantification	Indicator				
	I	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>
Mean	58,09	29,07	2,46	475,83	22
Median	58,7	30,39	2,18	483,5	23
Mode	49,24	21,52	1,52	273	7,93
Asymmetry	-1,146	-0,275	2,630	0,017	-0,364
Qualitative characteristic of asymmetry	Left-side	Left-side	Right-side	Right-side	Left-side

Source: author<sup>7</sup> calculation

Table 2 shows that I, I<sub>1</sub> and I<sub>4</sub> are characterized by left-sided asymmetry, and I<sub>2</sub> and I<sub>3</sub> right-sided. The results of calculations and there quantitative characteristics establish that these indicators are not distributed according to Gauss, indicating the asymmetry of distribution, that there is a mismatch value of fashion, the median, and the mean.

Asymmetrical distribution is characterized by the fact that most of the values of the indicators located on one side of the mean, and the other part is located at a distance from the other side. This indicates that the asymmetric distribution of the largest number of cases observations does not accumulate at the mean, and shifted toward smaller characteristic value (right-sided asymmetry) or towards more important features (left-sided asymmetry).

For example, the indicator for the share of equity capital in the assets or capital ratios (I) insurance market right-side distribution shows that for many years, the value of this indicator is close to the maximum, and therefore more than average.

Table 3

## Quantitative assessment of financial security insurance (non-life) market indicators

Quantification	Indicator					
	IN	IN <sub>1</sub>	IN <sub>2</sub>	IN <sub>3</sub>	IN <sub>4</sub>	IN <sub>5</sub>
Mean	85,53	63,98	26,72	2,35	448,92	22,60
Median	88,78	64,09	64,09	25,17	2,10	449,00
Mode	70,32	61,03	23,02	1,40	266,00	7,94
Asymmetry	-0,933	-0,554	1,085	2,600	-0,072	-0,439
Qualitative characteristic of asymmetry	Left-side	Left-side	Right-side	Right-side	Left-side	Left-side

Source: author<sup>7</sup> calculation

Table 3 shows that IN, IN<sub>1</sub>, IN<sub>4</sub> and IN<sub>5</sub> are characterized by left-sided asymmetry and IN<sub>2</sub> and IN<sub>3</sub> right-sided. As the insurance market in general, a non-life sector is characterized by high values of capitalization ratio (IN<sub>1</sub>) over the period since the indicator has left-side asymmetry. For indicators "share paid authorized capital assets (non-life)" (IN<sub>2</sub>) and "share of gross premiums (non-life) in GDP" (IN<sub>3</sub>) right-side distribution shows that for many years, the value of these indicators closes to the smallest value.

Since the most qualitative diagnosis of the financial security of the insurance market serves as a basis for evaluating the effectiveness of its management and its security. It is the evaluation of financial security can be set quantitative parameters safe condition.

Table 4

## Quantitative assessment of the financial security insurance (life) market indicator

Quantification	Indicator					
	IL	IL <sub>1</sub>	IL <sub>2</sub>	IL <sub>3</sub>	IL <sub>4</sub>	IL <sub>5</sub>
Mean	14,47	31,80	22,30	0,07	26,83	6,84
Median	11,22	33,21	24,94	0,05	22,00	5,52
Mode	3,75	12,28	13,89	0,08	4,00	3,02
Asymmetry	0,933	-0,449	-0,831	0,188	0,395	2,519
Qualitative characteristic of asymmetry	Right-side	Left-side	Left-side	Right-side	Right-side	Right-side

Source: author<sup>7</sup> calculation

Table 4, shows that  $IL_1$  and  $IL_2$  are characterized by left-sided asymmetry, and transmission line  $IL_3$ ,  $IL_4$  and  $IL_5$  are right-sided. This market is characterized by other trends, as compared to the non-life sector for most indicators typical right-sided asymmetry.

Unlike non-life sector, the share of paid-up share capital in assets (life) ( $IL_2$ ) close to the maximum value for the most number of observations which may indicate, that life insurers claim in full on the own capital and its size.

Thus, based on the priority groups of indicators assessing the financial security of the insurance market indicators suggested to use application of prudential supervision in the insurance market of Ukraine, indicating the effectiveness of regulation of the insurance market. It was determined that the results of the asymmetric distribution of indicators suggested by the author is advisable to determine the security status of the insurance market, based on the calculated average value, mode, median and asymmetric distribution for identifying security threats insurance market.

The financial security of the insurance market may depend on many objective and subjective, internal and external factors. However, it depends on the individual insurer's financial condition at the micro level.

So, given the impact of globalization on the development of insurance companies and insurance market as a whole, it is advisable to form a flexible system to maintain an adequate level of equity capital of insurers, particularly by preventing cases the presence of uncovered losses that can reduce the guarantee fund of insurer insolvency and cause the latter. This is possible through a gradual increase in the value of the share capital of the insurer due to oriented share net profit for capitalization and / or implementation of additional shares, which will increase the market value of the insurer.

**Conclusions.** The methodical approach to assess financial security of the insurance market was developed. It takes into account the structural composition of indicators (share of assets of insurers on insurance other than life insurance in total assets, the share of assets of insurance companies for life insurance in total assets, the share of equity capital in assets (figure capitalization), the proportion of equity capital in assets (rate of capitalization) (non-life); share of equity capital in assets (rate of capitalization) (life), the proportion of paid authorized capital assets, the proportion of paid authorized capital assets (non-life); share paid authorized capital assets (life), the share of gross premiums in GDP, the share of gross premiums (non-life) in GDP, the share of gross premiums (life) in GDP, the amount of gross premiums per capital and the amount of gross premiums per person (non-life); the amount of gross premiums per capital (life); the level of benefits, the level of payments (non-life); the level of benefits (life)) and determined the value of the average, median, mode and figure asymmetric distribution indicators assessing the financial security insurance market as a monitoring tool for treats identification.

Using obtained values the mean, median, mode and asymmetry of indicators of assessment the financial security of the insurance market (based on the calculated values of indicators of financial security of the insurance market for the years 2004 – 2015) was proposed as monitoring tools.

Market capitalization (share of equity capital in assets) was determined as the preferred indicator for assessing the financial security of the insurance market, because it can characterize the ability to withstand risks and to cover unexpected losses.

In the article was determined that maintaining the appropriate level of own funds is especially important in the transition to European requirements for regulation and supervision of insurers, besides most of the indicators are improved method to assess the level of financial security into account the value of equity capital.

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