

*Електронний журнал «Ефективна економіка» включено до переліку наукових фахових видань України з питань економіки (Категорія «Б», Наказ Міністерства освіти і науки України № 975 від 11.07.2019). Спеціальності – 051, 071, 072, 073, 075, 076, 292. Ефективна економіка. 2023. № 9.*

**DOI: <http://doi.org/10.32702/2307-2105.2023.9.28>**

**УДК 364.3: 368.9**

*R. Snishchenko,*

*Doctor of Economic Sciences, Associate Professor, Professor of the Department of Finance, Accounting and Auditing,*

*Khmelnyskyi Cooperative Trade and Economic Institute*

*ORCID ID: <https://orcid.org/0000-0003-2857-0980>*

*L. Krot,*

*PhD in Economics, Associate Professor, Associate Professor of Department of Accounting and Finance, Kremenchuk Mykhailo Ostrohradskyi National University*

*ORCID ID: <https://orcid.org/0000-0001-9999-0144>*

## **MANAGEMENT OF INSURANCE ORGANIZATIONS DURING THE WAR**

*Р. Г. Сніщенко,*

*д. е. н., доцент, професор кафедри фінансів, обліку та аудиту, Хмельницький кооперативний торговельно-економічний інститут*

*Л. М. Крот,*

*к. е. н., доцент, доцент кафедри обліку і фінансів, Кременчуцький національний університет імені Михайла Остроградського*

## **УПРАВЛІННЯ СТРАХОВИМИ ОРГАНІЗАЦІЯМИ В ПЕРІОД ВІЙНИ**

*The article examines the main aspects of the management of insurance organizations during the armed invasion of the Russian invaders on the territory of Ukraine. The purpose of the article is to determine the impact of negative factors related to the war on the work of insurance companies and justify the measures that must be taken to preserve the client base and prevent financial losses. The object of the research is the processes of organization and management of the work of insurance companies. The subject of the study is the ways of optimizing the work of insurers in conditions of external and internal negative influences. The research used general scientific and special research methods: statistical analysis, scientific abstraction, system-complex approach, correlation-regression analysis. When analyzing the structure of the insurance portfolio, it was found that in 2022, compared to 2021, the volumes of property and fire risks, financial risks and CASCO insurance decreased the most. The drivers of support for the non-life insurance business were the "Green Card", OSCPV and accident insurance. The main reasons for the strengthening of external and internal negative influences on the activity of insurers of Ukraine during the period of armed attack have been determined. To determine the influence of negative factors related to the war on the work of insurance companies, a correlation-regression analysis of the relationship between the number of individual groups of displaced persons and insurance premiums was conducted. As a result, economic-mathematical models were created that reflect the dynamics of the number of internally displaced persons for forecasting insurance premiums received by insurers of a specific macro-region. It was determined that the main influence on the volume of insurance premiums during the researched period are factors related to transport, capacity for work and employment and the tendency to further move forced migrants. It is proposed to use this methodology for calculating the number of insurance premiums for each type of insurance and for individual regions and settlements.*

*У статті досліджено основні аспекти управління страховими організаціями в період збройного вторгнення російських окупантів на територію України. Мета статті полягає у визначенні впливу негативних чинників, пов'язаних з війною, на роботу страхових компаній та обґрунтуванні заходів, які необхідно вжити для збереження клієнтської бази та запобігання фінансових втрат. Об'єктом дослідження є процеси організації і управління роботою страхових компаній. Предметом дослідження виступають напрями*

*оптимізації роботи страховиків в умовах зовнішніх і внутрішніх негативних впливів. У дослідженні було використано загальнонаукові і спеціальні методи дослідження: статистичного аналізу, наукової абстракції, системно-комплексний підхід, кореляційно-регресійний аналіз. При проведенні аналізу структури страхового портфеля виявлено, що у 2022 році порівняно з 2021 роком найбільше скоротилися обсяги страхування майнових та вогневих ризиків, фінансових ризиків та КАСКО. Драйверами підтримки страхового бізнесу non-life стали «Зелена картка», ОСЦПВ та страхування від нещасних випадків. Визначені основні причини посилення зовнішніх і внутрішніх негативних впливів на діяльність страховиків України в період збройного нападу. Для визначення впливу негативних чинників, пов'язаних з війною на роботу страхових компаній проведено кореляційно-регресійний аналіз зв'язків чисельності окремих груп переміщених осіб і страхових премій. В його результаті створено економіко-математичні моделі, які відображають динаміку кількості внутрішньо переміщених осіб для прогнозу страхових премій, отриманих страховиками конкретного макрорегіону. Визначено, що основний вплив за досліджуваний період на обсяги страхових премій мають фактори, пов'язані з транспортом, дієдатністю та працевлаштованістю і схильністю до подальшого переміщення вимушених мігрантів. Запропоновано використання даної методики для розрахунку кількості страхових премій по кожному виду страхування і для окремих областей та населених пунктів.*

**Keywords:** *insurance, insurance risks, insurance management, insurers, policyholders, war, insurance premiums, insurance payments.*

**Ключові слова:** *страхування, страхові ризики, страховий менеджмент, страховики, страхувальники, війна, страхові премії, страхові виплати.*

**Introduction** War can significantly change the working conditions of insurance companies due to the appearance of new types of risks and threats to their economic activity, which can lead to the loss of assets or to a significant increase in the number of insurance cases. The total armed aggression of Russia forced millions of Ukrainian citizens to leave the country in search of safety. Many of them have already returned home or are planning to do so, while others are just planning to

leave. The demographic structure of Ukraine is rapidly changing both quantitatively and qualitatively. These changes affect the socio-economic sphere, the country's defense capability and Ukraine's position in the world, and affect the Ukrainian reality in the medium and long term.

**Formulation of the problem.** The war period was accompanied by significant changes in the social, economic and political environment. There is a change in insurance priorities and, as a result, new risks arise that are not inherent in insurance activities in peacetime. Insurance companies must conduct a comprehensive analysis of the risks arising from hostilities, including loss of property, damage and loss of life. It is important to assess new risks and ensure that they are adequately covered for clients.

**The purpose of the article** there is a determination of the impact of negative factors related to the war on the work of insurance companies and a justification of the measures that must be taken to maintain the client base and prevention of financial losses. The object of the research is the processes of organization and management of the work of insurance companies. The subject of the study is the ways of optimizing the work of insurers in conditions of external and internal negative influences.

When conducting the research, general scientific and special research methods were used: statistical analysis, scientific abstraction, system-complex approach, correlation-regression analysis.

**Analysis of recent research and publications.** Risk management is a critically important aspect of the activity of insurance organizations, therefore, the problems of insurance management are constantly in the field of view of both insurers and scientists. Among them, V. V. Loiko in [1] investigates the types of financial risks of an insurance company and the reasons that can contribute to their occurrence, singles out the most sensitive components of the activities of insurance companies to financial risks and singles out the main factors that caused them - economic factors, external interventions in the activities of the insurance company, legal interventions, instability of the financial market, etc. D. A. Vanina in [2] cites

the peculiarities of determining the criteria for the classification of financial risks of insurance organizations. Semikolenova S.V., Grabar A.P. in [3] considering the features of insurance of enterprises against financial risks, determine the main stages and ways of carrying out systemic insurance protection. O.V. Korvat in [4], considering the possibilities of using financial risk insurance in Ukraine compared to EU countries, determines the directions of managing insurance services during economic instability. It should be noted that the vast majority of scientific works relate to problematic aspects of the work of business entities in conditions of instability in peacetime. Therefore, regardless of the large number of conducted studies in the field of insurance management, we see the expediency of further developments regarding the activities of insurance companies in the conditions of military challenges. determines the direction of management of insurance services during economic instability. It should be noted that the vast majority of scientific works relate to problematic aspects of the work of business entities in conditions of instability in peacetime. Therefore, regardless of the large number of conducted studies in the field of insurance management, we see the expediency of further developments regarding the activities of insurance companies in the conditions of military challenges. determines the direction of management of insurance services during economic instability. It should be noted that the vast majority of scientific works relate to problematic aspects of the work of business entities in conditions of instability in peacetime. Therefore, regardless of the large number of conducted studies in the field of insurance management, we see the expediency of further developments regarding the activities of insurance companies in the conditions of military challenges.

**Research results.** According to the International Organization for Migration (IOM) [5] and the EU [6], in 2022, more than 7.8 million Ukrainian refugees were forced to leave Ukraine, almost 4.7 million of them received temporary protection. Population movement within Ukraine involved about 8 million people. The volume of migration exceeded all indicators during the period of independence of Ukraine since 1991 [6,7]. The change in the conditions of existence caused a change in the

priorities of existing and potential policyholders, which led to the disruption of traditional ties between participants in the insurance process, and as a result - to a decrease in the number of insurance contracts.

In the structure of the insurance portfolio in 2022 compared to 2021, the volumes of property and fire risk insurance (-60%), financial risks (-64%) and CASCO (-30%) decreased the most. The drivers of non-life insurance business support were "Green Card" (+76%), Social Security Insurance (-13%), accident insurance (-16%). Income from life insurance premiums decreased by 16%.

In 2021, 44% of insurance premiums traditionally fell on auto insurance (OSTCPV, Green Card, CASCO) - during the period of military aggression, the share of these types of insurance in the portfolio became more significant (for the same period last year – 36%). Personal types of insurance (DMS, accident insurance, life insurance) accounted for 31% (Table 1).

**Table 1. Dynamics of insurance portfolio volumes, UAH million**

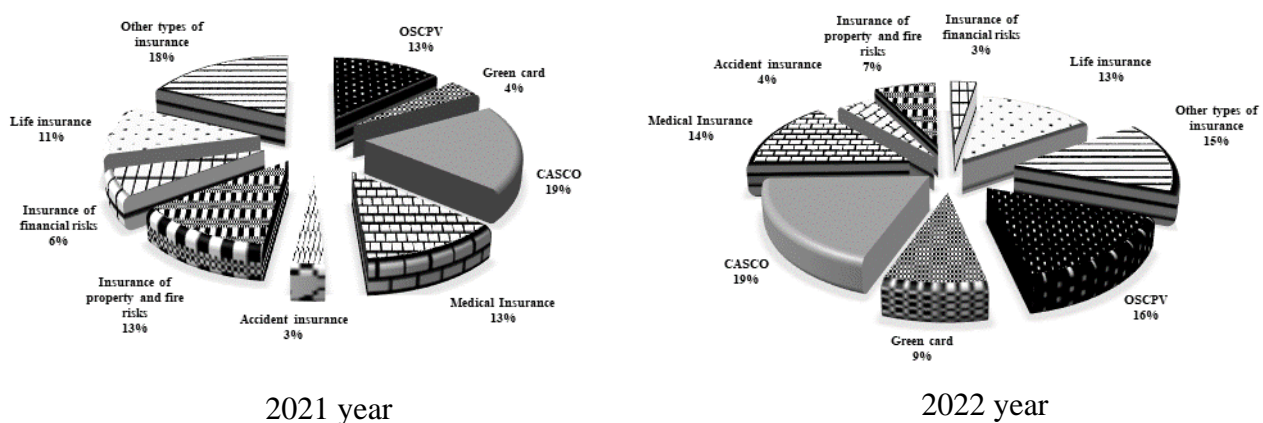
	<b>2021</b>	<b>2022</b>	<b>abs.</b>	<b>relative</b>
OSCPV	3245.3	2803.0	-442.3	-13.6
Green card	885.2	1559.4	674.2	76.2
CASCO	4804.7	3396.3	-1408.4	-29.3
Medical Insurance	3329.2	2580.3	-748.9	-22.5
Accident insurance	831.2	699.7	-131.5	-15.8
Insurance of property and fire risks	3097.4	1236.7	-1860.7	-60.1
Insurance of financial risks	1391.7	494.9	-896.8	-64.4
Life insurance	2700.0	2257.5	-442.5	-16.4
Other types of insurance	4495.0	2742.9	-1752.1	-39.0

*Source [6]*

A comparative analysis of the dynamics of the structure of the insurance portfolio (Fig. 1) showed that the insurance market in general was able to minimize the consequences of the realization of risks caused by the war.

The analysis of existing publications [11-13, etc.] makes it possible to formulate the main reasons for the strengthening of external and internal negative influences on the activity of insurers of Ukraine during the armed attack of the Russian Federation:

- the sudden emergence of migration of large masses of the population within Ukraine and abroad;
- complete or partial cessation of business entities due to occupation or its threat;
- change in preferences and life priorities of policyholders due to changes in living, working and leisure conditions;
- termination of business activity due to its lack of demand during wartime;
- a significant decrease in the income of economic entities and their employees due to the violation of partnership relations and logistics;
- increase in the threat of destruction or damage to property as a result of



**Fig. 1. Changing the structure of the insurance portfolio**

*Source: [5]*

military operations (shelling, air defense work, mining, etc.);

- increase in the threat of material and financial losses due to the deterioration of the crime-related situation and looting;

- increase in cases of harming the health and life of citizens due to the exacerbation of social conflict and destabilization of the domestic political situation.

The dynamics of the indicators given in [6] for 2022 indicate that the largest decline in the volume of activity occurred at the end of the 1st quarter. In the II quarter, the decline continued, but it was less rapid - insurers were able to organize and adjust their work in the conditions of martial law. This happened due to a number of reasons, the main of which, according to [7], are:

- even in the pre-war period, approximately 90% of insurance premiums were concentrated by approximately 60 insurers (50 insurers of the non-life market and 10 insurers of the life market);

- at the same time, the concentration of insurance premiums from individuals was even higher – 80% of the market is occupied by 20 insurers;

- the peculiarity of the life insurance market before the war was that it was small and highly concentrated: a quarter of the market players (5 insurance companies) accounted for 90.6% of life insurance reserves. Insurers who held less than 100 positions accounted for only 0.5% of total insurance premiums;

- the share of voluntary insurance premiums exceeded 75% before the start of the war. Auto insurance (CASCO, OSCPV and Green Card) and personal insurance (medical insurance, accident insurance, life insurance) consistently led by the volume of premiums: 36% and 27%, respectively;

- even in the pre-war period, conditions were created for strengthening requirements for corporate governance, introduction of a civilized procedure for removing insolvent insurers from the market, introduction of Solvency II.

The forced relocation of clients and own employees caused an urgent need to change the forms of service and business process algorithms of insurance companies.

To determine the influence of negative factors related to the war on the work of insurance companies, a correlation-regression analysis of the relationship between the

number of individual groups of displaced persons and insurance premiums was conducted.

To conduct research, the authors used data from reports of the UN International Organization for Migration [5], as well as other international [11, 13] and domestic [8-10-11] information agencies and the calculation method proposed in [14].

The UN International Organization for Migration is conducting a representative express assessment of the presence of internally displaced persons at the macro-regional level. The composition and number of macroregions are given in [14].

Table 2 shows the distribution of the most profitable types of insurance by macro-regions of Ukraine.

**Table 2. Distribution of the most profitable types of insurance by macro-regions of Ukraine in 2022, thousand UAH.**

Macro region	Total premiums	CASCO	OSATSV	DMS	Zel. map	Total payouts
Northern	7833081.5	2,503,913.60	1343873	1443347.9	441142.7	2646518.1
Southern	793249.1	226687.1	247225.3	52421.3	180084.2	230489.2
East	2107048,3	883364	600825.7	154246.9	128161.8	591157.4
Central	1145496.4	396445.3	387576.3	32858.9	106461.9	291849.9
West	2732218.6	698059.1	862565.7	48634.9	796014.9	818326.3
Kyiv	5679978.40	1349178.20	987697.00	934525.30	397770.80	1488397.20
In total	21891072,3	7057647.3	4529763	3166035.2	2049636.3	6066738.1

Source [5, 13]

It is proposed to create an economic-mathematical model that will reproduce the dynamics of quantity internally displaced persons for the forecast insurance premiums, received by insurers of a specific macro-region using the correlation-regression analysis method:

$$K_{macro\ region} = \sum_{i=1}^n aiXi,$$

where  $K_{macro\ region}$  – dependent variable;  $ai$  – regression model coefficients;  $Chi$  are model factors,  $i= 1, \dots n$ .

To bring the output data of the calculation–regression model to the single dimension  $K_{macroregion}$  is taken as the ratio of insurance premiums, received by insurers

of a specific macro-region to the total amount of insurance premiums received by insurance companies.

The variable indicators that have the greatest influence on the value of  $K_{\text{macroregion}}$  are determined by the method of expert evaluations:

$X1$  – coefficient that takes into account the ratio of the number of households that arrived in the macro-region by their own transport to the total number of internally displaced households in the macro-region;

$X2$  – coefficient that takes into account the ratio of the number of internally displaced households with minor children or disabled members to the total number of internally displaced households in the macro-region;

$X3$  – coefficient that takes into account the ratio of the number of employed people internally displaced persons to the total amount internally displaced persons in the macro-region;

$X4$  – coefficient that takes into account the quantity ratio internally displaced persons with intentions of further movement to the total number internally displaced persons in the macro-region;

$X5$  – coefficient that takes into account the number of women among internally displaced persons in the macro-region.

$X6$  – coefficient that takes into account the quantity ratio internally displaced persons, who applied for state assistance or have social benefits to the total number internally displaced persons in the macro-region.

The initial data on the calculated coefficients  $X1 - X6$  have already been calculated by the authors in [14] and used in this study. Table 3 presents data reduced to a single dimension on the volume of insurance premiums and on the number of forced migrants for obtaining a calculation model. It can be used for the forecast insurance premiums, received by insurers in the northern macroregion.

**Table 3. Initial data for obtaining the calculation model**

<i>midnight</i>	<b>X1</b>	<b>X2</b>	<b>X3</b>	<b>X4</b>	<b>X5</b>	<b>X6</b>
0.39	0.87	0.71	0.09	0.77	0.76	0.05
0.38	0.86	0.75	0.08	0.68	0.78	0.08
0.35	0.89	0.69	0.10	0.62	0.83	0.11
0.36	0.65	0.62	0.35	0.64	0.85	0.13
0.32	0.74	0.65	0.29	0.62	0.82	0.14
0.34	0.74	0.74	0.27	0.59	0.79	0.15
0.39	0.75	0.76	0.34	0.42	0.78	0.21
0.36	0.79	0.74	0.36	0.33	0.74	0.27

*Source: calculated according to data [5,13]*

An economic-mathematical model that reproduces the dynamics of quantity internally displaced persons for the forecast insurance premiums, received by insurers of a specific macro-region looks like:

$$\text{North: } K_{\text{north}} = 0.12 + 0.3X_2 + 0.01X_3 + 0.05X_4$$

Similarly, economic and mathematical models that reproduce the dynamics of the number of internally displaced persons were obtained for the forecast insurance premiums, received by insurers of a specific macro-region.

The accuracy of the economic-mathematical model based on the average relative error of approximation is calculated by the formula:

$$\bar{\varepsilon} = \frac{1}{n} \sum_{i=1}^n \left| \frac{y_{\text{CTI}} - y_{\text{прогнози}}}{y_{\text{CTI}}} \right| * 100$$

$\bar{\varepsilon} = 14.02\% < 15\%$ , which indicates sufficient accuracy of the obtained calculation model.

Similarly, calculation models that reproduce the dynamics of the quantity were obtained internally displaced persons for the forecast insurance premiums, received by insurers other macro-regions.

$$\text{Kyiv: } K_{\text{Kyiv}} = 0.33 - 0.6X_1 - 0.08X_2 - 0.02X_3 - 0.03X_4$$

$$\text{Center: } K_{\text{center}} = -0.006 - 0.004X_1 + 0.08X_2 - 0.06X_4$$

$$\text{West: } K_{\text{west}} = 0.17 - 0.06X_2 - 0.03X_3 + 0.03X_4$$

$$\text{East: } K_{\text{shid}} = -0.02 + 0.07X_1 + 0.18X_2 + 0.12X_3$$

$$\text{South: } K_{\text{south}} = 0.02 + 0.12X_2 - 0.01X_3 - 0.08X_4$$

$$\text{North: } K_{\text{north}} = 0.12 + 0.3X_2 + 0.01X_3 + 0.05X_4$$

**Conclusions and prospects of further investigations in this direction.** As can be seen from the created models, the main influence for the studied period on the volume of insurance premiums is due to factors related to transport, capacity for work and employment, and the propensity for further movement of forced migrants.

For effective countermeasures against negative factors and threats to insurance activity companies must develop and implement effective risk management measures to maintain the customer base and prevention of financial losses. The main ones are: introduction of a remote form of customer service; expansion of territorial representation; optimization and unification of insurance service packages; maintaining and increasing the achieved level of trust in market operators; strict compliance with regulatory requirements; increasing state participation in reinsurance, creating joint public-private organizations to cover risks.

This technique can be used to calculate the number of insurance premiums for each type of insurance and for individual regions and settlements.

### **References**

1. Loiko, V.V., and Boyeva, M.Yu. (2019), “Management of financial risks of an insurance company”, *European Scientific Journal of Economic and Financial Innovations*, vol. 2, no. 4, pp.21-29
2. Vanina, D. A. (2014), “Classification of financial risks of insurance organizations”, *Scientific Bulletin of ONEU*, vol. 1, pp. 17-29.
3. Semikolenova, S. V. and Grabar, A. P. (2013), “Problems and prospects for the development of financial risk insurance in Ukraine”, *Proceedings. Economic sciences*, vol. 146, pp. 91-94.
4. Korvat, O. V. (2016), “Management of insurance of financial risks in conditions of economic instability”, *Eastern Europe: Economy, Business and Management*, vol. 5, no. 05, pp. 303-309.
5. The official site of International Organization for Migration (2023), “Report on internal displacement in Ukraine. Survey of the general population”, available at: <https://dtm.iom.int/reports> (Accessed 4 September 2023).

6. The official site of NBU (2023), “Performance indicators of insurance companies. Supervisory statistics”, available at: <https://bank.gov.ua/ua/statistic/supervision-statist#6> (Accessed 4 September 2023).

7. The official site of NBU (2023), “White paper “Future regulation of the insurance market in Ukraine”, available at: <https://bank.gov.ua/ua/news/all/bilakniga-maybutnye-regulyuvannya-rinku-strahuvannya> (Accessed 4 September 2023).

8. The official site of Derzhavna sluzhba statystyky Ukrainy (2023), available at: <http://www.ukrstat.gov.ua/> (Accessed 4 September 2023).

9. The official site of Natsional'na sotsial'na servisna sluzhba Ukrayiny (2023), available at: <https://nssu.gov.ua/vpo> (Accessed 4 September 2023).

10. Cabinet of Ministers of Ukraine (2023), available at: <https://www.kmu.gov.ua> (Accessed 4 September 2023).

11. The official site of Minfin Media (2023), available at: <http://www.minfin.com.ua/> (Accessed 4 September 2023).

12. The official site of The EU stands with Ukraine (2023), “The EU's response to the migration crisis in Europe. We are with Ukraine”, available at: <https://ukraine.europarl.europa.eu> (Accessed 4 September 2023)..

13. The official site of Insurance TOP (2023), “Results 2022”, vol. 1, no. 93, available at: [www.insurancetop.com](http://www.insurancetop.com) (Accessed 4 September 2023).

14. Snishchenko, R.G. and Krot, L.M. (2023), Financial security of macro regions in the period of military aggression, *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, vol. 4, pp. 157-163

### **Література**

1. Лойко В. В., Боева М. Ю. Управління фінансовими ризиками страхової компанії. *Європейський науковий журнал Економічних та Фінансових інновацій*. Том 2. № 4. 2019. С.21-29

2. Ваніна Д. А. Класифікація фінансових ризиків страхових організацій. *Науковий вісник ОНЕУ*. №1. 2014.С. 17-29.

3. Семіколенова С. В., Грабар А. П. Проблеми та перспективи розвитку страхування фінансових ризиків в Україні. *Наукові записки. Економічні науки*. Том 146. 2013. С. 91-94.

4. Корват О. В. Управління страхуванням фінансових ризиків в умовах економічної нестабільності. *Східна Європа: економіка, бізнес та управління*. Випуск 5 (05). 2016. С. 303-309.

5. Report on internal displacement in Ukraine. Survey of the general population. *Офіційний сайт International Organization for Migration*. URL: <https://dtm.iom.int/reports> (дата звернення: 14.09.2023).

6. Показники діяльності страхових компаній. Національна статистика. *Офіційний сайт НБУ*. URL: <https://bank.gov.ua/ua/statistic/supervision-statist#6> (дата звернення: 14.09.2023).

7. Біла книга «Майбутнє регулювання ринку страхування в Україні». *Офіційний сайт НБУ*. URL: <https://bank.gov.ua/ua/news/all/bila-kniga-maybutnye-regulyuvannya-rinku-strahuvannya> (дата звернення: 14.09.2023).

8. Офіційний сайт *Derzhavna sluzhba statystyky Ukrainy*. URL: <http://www.ukrstat.gov.ua/> (дата звернення: 14.09.2023).

9. Офіційний сайт *Natsionalna sotsialna servisna sluzhba Ukrayiny* URL: <https://nssu.gov.ua/vro> (дата звернення: 14.09.2023).

10. Офіційний сайт *Kabinet Ministriv Ukrayiny*. URL: <https://www.kmu.gov.ua> (дата звернення: 14.09.2023).

11. Страхування. *Офіційний сайт MinfinMedia*. URL: <http://www.minfin.com.ua/> (дата звернення: 14.09.2023).

12. The EU's response to the migration crisis in Europe. We are with Ukraine. *Офіційний сайт EU stands with Ukraine* URL: <https://ukraine.europarl.europa.eu> (дата звернення: 14.09.2023).

13. Results 2022. *Офіційний сайт Insurance TOP №1(93)*. 2023 [www.insurancetop.com](http://www.insurancetop.com) (дата звернення: 14.09.2023).

14. Snishchenko R, Krot L, et al. Financial security of macro regions in the period of military aggression. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*. 2023, (4). p.p. 157-163

*Стаття надійшла до редакції 14.09.2023 р.*