

## Determination of Factors Affecting Sustainable Development of the Insurance Market in Ukraine

**Antonina Sholoiko**

Taras Shevchenko National University of Kyiv, Ukraine  
ORCID: 0000-0003-1239-4281, e-mail: sholoiko@univ.net.ua

**Liudmyla Shevchenko**

Taras Shevchenko National University of Kyiv, Ukraine  
ORCID: 0000-0002-4543-3876, e-mail: shevmila@univ.net.ua

DOI: 10.14595/CP/02/004

---

**Abstract.** Determination of the most influential factors affecting sustainable development of the insurance market is quite important for providing sustainable economy. In this context, information plays a great role in the decision-making process of government authorities, providers and consumers of insurance services. So it is necessary to define what information may be useful. The goal of the research is to select complex factors affecting sustainable development of the insurance market using the case of the Ukrainian insurance market. It was done with the help of factor analysis (selection method: principal component analysis; rotation method: varimax) in SPSS using open data of Ukrainian government institutions (2001-2018 years). The research made it possible to determine among 10 factors (average salary of physical entities, inflation rate, number of insurers, level of insurance payments, number of insurance brokers, insurance reserves, assets of insurers, charter capital of insurers, insurance density, share of foreign reinsurance premiums in total insurance premiums) 2 significant complex factors: solvency of insurers and solvency of consumers of insurance services affecting sustainable development of the insurance market of Ukraine. These results mean that it is necessary to decrease influence of these complex factors under implementation of Directive 2009/138/EC Solvency II into institutional environments of the Ukrainian insurance market under conditions of implementation of European integration vector by financial and other authorities of Ukraine. For sustainable development of the insurance market of Ukraine, it is essential to create and implement national and regional programs of sustainable development of the insurance market of Ukraine. The structure of such programs is suggested.

**Key words:** factor analysis, sustainable development, insurance market

**JEL:** G22, G28, G29

### Introduction

The developed insurance market is defined as one of the required conditions for the functioning of a stable country's economy, but to achieve this goal, firstly, it is necessary to ensure sustainable development of the insurance market. In this paper, 'sustainable development of insurance market' means the development of the insurance market by types of clients (physical and legal entities), types of insurance services, its prices and regional distribution that meets interests of shareholders, insurance companies, consumers and state within social, economic and ecological dimensions of sustainable development. These dimensions can be achieved by different types of insurance (health, pension and life

insurance, property and liability insurance, ecological insurance). Emerging countries have lots of disproportions in the development of the insurance market [Sholoiko, 2014, pp. 60-65], namely: predominant development of property insurance, legal entities as main clients of insurance companies, expensive insurance services distributed mainly in big cities.

A great number of factors impact sustainable development of the insurance market. Lots of information and poor-quality data make it difficult to determine the most influential factors for taking them into account in the work of legal authorities. Thus it is important to investigate such issues, based on different sources of data.

### **Theoretical premises**

There are many articles about the bilateral connection between insurance and economic growth [Alhassan, 2016, pp. 321-339; Lee, Chang, Arouri, 2016, pp. 361-369; Mohyul, Regupathi, 2017, pp. 501-519]. Issues on sustainable development of insurance industry and its impact on sustainable development are represented in research projects made by Kanojia, Ho, Huang, Ou, Lapinskaite, Radikaite [Kanojia, 2014, pp. 227-232, Lapinskaite, Radikaite, 2015, pp. 446-464, Ho, Huang, Ou, 2018, pp. 391-410]. A separate area of studying the impact of insurance companies on sustainable development of the economy is the research of investing the resources of insurance reserves of life insurance companies in green bonds or their own issuing of such securities. This aspect is reflected in the following works: [Moid, 2017, pp. 63-78; Jakubik, Uguz, 2021, pp. 381-393].

A significant amount of publications is devoted to indicators of development and security of the insurance market, such as insurance penetration, insurance density, share of life insurance, share of foreign reinsurance [Prikazyuk, Motashko, 2015, pp. 288-310; Tereshchenko, 2020, pp. 159-167; Valinkevych, Polchanov, Kovalenko, 2020, pp. 15-24]. These research works explain positive or negative tendencies of the development of the insurance market due to the impact of factors such as economic prosperity or crisis and instability, low or high inflation, low or high income of physical and legal entities, solvency or insolvency of insurers, etc. But the factors mentioned above are interconnected and it is necessary to combine them and continue further research using fewer factors.

Therefore the goal of this research is to select complex factors affecting sustainable development of the insurance market using the case of the Ukrainian insurance market.

## Methodology

The determination of factors affecting sustainable development of the insurance market was done using factor analysis (selection method: principal component analysis; rotation method: varimax with Kaiser Normalization) that is supported by IBM SPSS Statistics

21. The initial conditions of applying such a method are the following:

1. quantitative data;
2. data without gaps;
3. number of input factors not less than 10.

The ways of collecting such data can be several:

1. open data of government institutions;
2. questioning of the target audience;
3. combination of 1 and 2.

Questioning of the target audience can have gaps in data, that is why open data of Ukrainian government institutions (2001-2018 years) was used. This way of collecting data determines the list of factors that impact sustainable development of the Ukrainian insurance market:

1. average salary as main income of physical entities in Ukraine and primary source for insurance premiums (Av\_salary);
2. inflation rate (Inflation);
3. number of insurers as providers of insurance services (Insurers);
4. level of insurance payments as a key indicator of responsibility of insurers (Level\_ins\_paym);
5. number of insurance brokers as intermediaries between providers and consumers of insurance services (Ins\_brokers);
6. insurance reserves as a guarantee of future insurance payments by insurers (Ins\_reserves);
7. assets of insurers – quality and amount of assets are also a guarantee of future insurance payments by insurers (Assets\_of\_ins);
8. charter capital of insurers – capitalization of the insurance market plays an important role in sustainable development of the insurance market (Charter\_cap\_ins);

9. insurance density means spending on insurance services per person (Ins\_dens);
10. share of foreign reinsurance premiums in total insurance premiums is one of the components of financial security of insurers (Ins\_rein\_f).

After applying the factor analysis, it will be determined which of the above factors must be part of the selected complex factors that will allow their author's interpretation as a basis for developing proposals for the creation and implementation of national and regional programs of sustainable development of the insurance market of Ukraine.

## Results

Determination of factors affecting sustainable development of the insurance market consists of several stages.

1. First of all, it is necessary to describe all the factors and make sure that they are quantitative (see Table. 1).

**Table. 1.** Description of factors

N	Factor	Type	Width	Decimal characters	Missing values
1	Av_salary	Numerical	8	0	No
2	Inflation	Numerical	8	1	No
3	Insurers	Numerical	8	0	No
4	Level_ins_paym	Numerical	8	1	No
5	Ins_brokers	Numerical	8	0	No
6	Ins_reserves	Numerical	8	1	No
7	Assets_of_ins	Numerical	8	1	No
8	Charter_cap_ins	Numerical	8	1	No
9	Ins_dens	Numerical	8	1	No
10	Ins_rein_f	Numerical	8	2	No

Source: created by authors in SPSS

2. The next stage consists of inputting data from open data sources of Ukrainian government institutions (2001-2018 years) (see Table 2).

**Table.2.** Inputting data

Year	Av_sala ry	Inflation	Insurers	Level_in s_paym	Ins_bro kers	Ins_rese rves	Assets_ of_ins	Charter _cap_in s	Ins_den s	Ins_rein _f
2001	311	106,1	328	16,0	43	1179,1	3007,4	1036,8	51,8	25,90
2002	376	99,4	338	14,2	61	1896,1	5329,4	1550,5	76,0	29,50
2003	462	108,2	357	11,6	80	3774,9	10457,4	3646,0	144,8	34,80
2004	590	112,3	387	14,6	78	8272,2	20012,8	5623,0	204,3	9,78
2005	806	110,3	398	20,7	75	5045,8	20920,1	6688,0	159,5	5,00
2006	1041	111,6	411	26,5	69	6014,1	23994,6	8391,2	188,2	4,10
2007	1351	116,6	446	31,4	64	8423,3	32213,0	10633,6	266,2	4,30
2008	1806	122,3	469	41,0	57	10904,1	41931,0	13206,4	346,7	4,30
2009	1906	112,3	450	47,8	57	10141,3	41970,1	14876,0	275,8	5,40
2010	2250	109,1	456	44,2	60	11371,8	45234,6	14429,2	291,0	4,30
2011	2648	104,6	442	26,2	60	11179,3	48122,7	14091,8	394,1	5,20
2012	3041	99,8	414	24,5	64	12577,6	56224,7	14579,0	445,2	6,00
2013	3282	100,5	407	21,2	63	14435,7	66387,5	15232,5	474,7	5,70
2014	3480	124,9	382	26,3	61	15828,0	70261,2	15120,9	433,4	5,70
2015	4195	143,3	361	34,0	61	18376,3	60729,1	14474,8	522,8	8,50
2016	5183	112,4	310	32,3	75	20936,7	56075,6	12661,6	621,4	11,30
2017	7104	113,7	294	36,0	75	22864,4	57381,0	12831,3	672,3	7,80
2018	8865	109,8	281	36,1	70	26975,6	63493,3	12636,6	816,7	6,10

Source: compiled in SPSS based on: [National Bank of Ukraine, index.minfin.com.ua]

3. Then, it is possible to use factor analysis (selection method: principal component analysis; rotation method: varimax with Kaiser Normalization) (see Table 3).

**Table.3.** Application of factor analysis

Year	FAC1_1	FAC2_1
2001	-1,70469	-0,39088
2002	-1,92537	0,16433
2003	-1,90246	0,69991
2004	-0,91451	0,10321
2005	-0,68282	-0,33494
2006	-0,33096	-0,63043
2007	0,17451	-0,94598

2008	0,79891	-1,28474
2009	0,79047	-1,29073
2010	0,75368	-1,11364
2011	0,39903	-0,59433
2012	0,35786	-0,10848
2013	0,46439	0,05693
2014	0,78148	0,02389
2015	0,99541	0,25354
2016	0,39349	1,47457
2017	0,65159	1,76322
2018	0,9	2,15454

Source: calculated by authors in SPSS

Table. 3 shows that we get 2 complex factors named as components that explain 75.699% of dispersion (Table 5).

**Table 4.** A full explanation of the dispersions

Component	Initial eigenvalues			Sum of squared extraction loads		
	Total	% Dispersion	Cumulative %	Total	% Dispersion	Cumulative %
1	5,351	53,513	53,513	5,351	53,513	53,513
2	2,219	22,186	75,699	2,219	22,186	75,699
3	,914	9,140	84,839			
4	,830	8,305	93,143			
5	,395	3,950	97,094			
6	,229	2,290	99,383			
7	,042	,419	99,802			
8	,011	,109	99,911			
9	,007	,065	99,977			
10	,002	,023	100,000			

Source: calculated by authors in SPSS

To interpret these two components (which are more informative than others), it is necessary to find out which factors they include (Table 5).

**Table 5.** Component matrix

Factors	Component	
	1	2
Charter_cap_ins	,961	-,041
Assets_of_ins	,900	,284
Ins_rein_f	-,834	,229
Level_ins_paym	,822	-,166

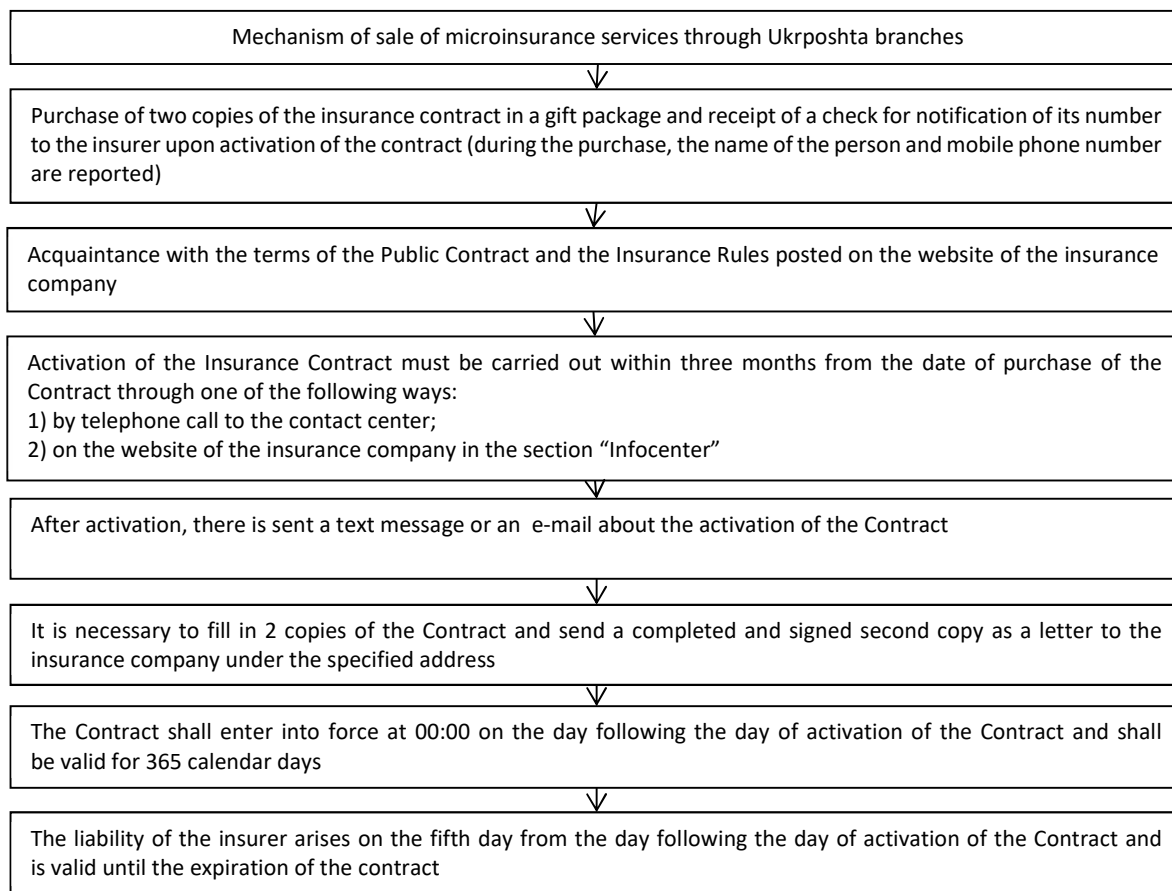
Ins_reserves	,772	,630
Ins_dens	,751	,642
Inflation	,439	-,024
Insurers	,243	-,905
Av_salary	,652	,726
Ins_brokers	-,099	,548

*Source: Calculated by authors in SPSS*

Table 5 represents which factors load components. It is normal when meaning of the factor is 0.7 and more. Thus, it is possible to interpret that the first component affecting sustainable development of the Ukrainian insurance market is connected with solvency of insurers, because it includes such factors as charter capital of insurers (0.961), assets of insurers (0.900), level of insurance payments (0.822), insurance reserves (0.772), insurance density (0.751). The second component affecting sustainable development of the Ukrainian insurance market is connected with solvency of consumers of insurance services, because it includes such a factor as the average salary of physical entities in Ukraine (0,726). So these components are “two sides of the same coin”: for increasing the level of consumption of insurance services in Ukraine, it is vital to increase both the level of solvency of insurers and potential policy holders.

In this situation, in order to increase the availability of insurance services in Ukraine according to the insurer’s pricing policy and income level, regardless of the region of residence, it is necessary to more actively introduce microinsurance through a variety of distribution channels. A few years ago, one of the insurance companies made such an attempt, starting to distribute insurance services worth from UAH 60 through the post offices of the national communication operator Ukrposhta. It worked as follows (Figure. 1).

**Figure 1.** Mechanism of sale of microinsurance services through Ukrposhta branches



Source: compiled on the basis of insurance company data

The advantage of the introduction of such services was their simplification and focus not only on property, but also on personal matters, such as health and efficiency (Table 6).

**Table 6.** Characteristics of microinsurance products distributed through Ukrposhta branches

Name of the insurance product	Sum insured, UAH	The cost of the insurance product, UAH	Term of the contract	Note
Child protection (child accident insurance)	10000	60	1 year	Payment is made according to a simplified procedure
Health protection (adult insurance against accidents and diseases)	10000	80	1 year	
Protection of passengers from an accident while in a car	5000	60	1 year	Round-the-clock support
Driver protection	5000	70	1 year	

Source: own work compiled on the basis of insurance company data



However, today, specified microinsurance services are no longer distributed through Ukrposhta branches. One of the reasons for this situation is the fact that, for example, microinsurance services for the protection of property included a deduction, as well as the distribution of the established insignificant limit of the sum insured on the components of the insured events, which had a low probability of occurrence, and therefore a low probability of insurance payment realization to the consumer took place. This did not contribute to the spread of microinsurance, which could boost the development of the insurance market in less developed regions of Ukraine, as now insurance is mostly concentrated in big cities, while inclusiveness assumes insurance coverage of all territories and all types of insurance consumers due to a wide range and affordability of insurance services.

At the same time, sustainable development of the insurance market of Ukraine is influenced not only by quantitative factors, but also by some non-quantitative ones, for example, institutional and legal support, which is outdated and does not take into account modern realities and challenges. To ensure sustainable development of the insurance market of Ukraine at the state and regional levels, it is advisable to develop and adopt a national program of sustainable development of the insurance market, and within such a national program, regional programs for sustainable development of the insurance market should be worked out and adopted for each region. Ukraine has adopted only two programs for the development of the insurance market and one for the development of the financial sector:

- The program of development of the domestic insurance market for 1998-2000 (devoted to the improvement of the institutional and legal infrastructure in terms of improving the Law of Ukraine "On Insurance" and institutional and organizational infrastructure, in particular the development of associations of insurers and actuaries, as well as emergency commissioners, but the purpose of the program was not specified and no attention was paid to the development of other groups of infrastructure entities of the insurance market) [Resolution of the Cabinet of Ministers of Ukraine, 1998];
- The program of development of the insurance market of Ukraine for 2001-2004 (contained the purpose of the program, principles of insurance market development, provisions on development of institutional and legal infrastructure concerning adaptation of the Law of Ukraine "On insurance" to EU requirements, formation of socially oriented insurance services, strengthening of insurance

industry staffing, etc., but there are no provisions for the development of institutional and organizational infrastructure of the insurance market of Ukraine) [Resolution of the Cabinet of Ministers of Ukraine, 2001];

- The comprehensive program for the development of the financial sector of Ukraine until 2020 (devoted to financial stability and sustainable development, financial sector infrastructure (more attention is paid to insurance companies as infrastructural entities of the financial sector), institutional capacity of regulators and the Deposit Guarantee Fund for Individuals, protection of the rights of consumers of financial services and creditors, but the listed above is only partially focused on problems of the development of the insurance market of Ukraine and its infrastructure) [Resolution of the Board of the National Bank of Ukraine, 2015].

We believe that, in accordance with the Resolution of the Cabinet of Ministers of Ukraine “On approval of the Procedure for development and implementation of state target programs” [Resolution of the Cabinet of Ministers of Ukraine, 2007], a new national program and relevant regional programs for sustainable development of the insurance market of Ukraine and its infrastructure should contain the following components:

- 1) Justification of the program’s expediency (the presence of the problem and the reasons for its occurrence). The main problems of the insurance market should include low capacity of the insurance market (due to low capitalization of insurance companies or solvency), which does not allow to keep catastrophic risks in the national market; insufficient competitiveness of insurance companies (in particular due to the narrow range and poor quality of insurance services); unsatisfactory level of insurance culture of consumers of insurance services and insufficient protection of their interests. Regarding the insurance market infrastructure, the institutional and legal infrastructure (in the direction of its improvement by adapting international standards, in particular the Insurance Core Principles and EU Directives to domestic conditions) and institutional and organizational infrastructure (in the direction of its modernization to strengthen the security of the insurance market and the state) need transformation.
- 2) The purpose of the program (that sustainable development of the insurance market and its infrastructure are necessary to increase the competitiveness

of major and infrastructural entities and strengthen the security of the insurance market of Ukraine and the security of the state);

3) Directions for solving the problem:

- development of the main subjects of the insurance market in terms of increasing their solvency and the range of competitive and affordable insurance services;
- development of the institutional and legal infrastructure of the insurance market, in terms of improving both general and special formal components (in particular, it is advisable to develop the Insurance Code of Ukraine, which would take into account key provisions of the Insurance Core Principles and EU Directives);
- development of the institutional and organizational infrastructure of the insurance market, in terms of protection of the rights of consumers of insurance services and prevention of bad faith in the field of insurance; increasing the capacity of the insurance market; information support; self-regulation.

4) The results of the program implementation (achievement of the goal) and the legally permitted resources required for its implementation.

This structure of the Program will allow focusing on modernization of both the structure (insurance market and its main subjects) and infrastructure (institutions and infrastructure organizations, infrastructure services and assets provided by them) for sustainable development of the insurance market.

## **Conclusion and recommendations**

Being influenced by lots of factors and information, the application of factor analysis (10 factors) leads to determination of significant complex factors (2 components: solvency of insurers and solvency of consumers of insurance services) affecting sustainable development of the insurance market (the case of Ukraine). These results mean that it is vital for financial and other authorities of Ukraine to pay special attention to given complex factors for encouraging further sustainable development of the insurance market. For instance, it can be accounted within implementation of Directive 2009/138/EC of the European Parliament

and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) into institutional environments of the Ukrainian insurance market under implementation of European integration vector. For sustainable development of the insurance market of Ukraine, it is necessary to create and implement national and regional programs of sustainable development of the insurance market of Ukraine with the following directions for solving the problem:

- strengthen the solvency of insurers and potential policyholders (through creating a range of competitive and affordable insurance services (microinsurance services));
- develop the institutional and legal infrastructure of the insurance market (development and implementation of adequate “rules of the game”);
- develop the institutional and organizational infrastructure of the insurance market (expanding the circle of “game participants”).

## References

- Sholoiko, A., (2014). Development of the insurance market: national and world aspects. Bulletin of Taras Shevchenko National University of Kyiv. Economics, No. 156.
- Alhassan, A., (2016). Insurance market development and economic growth: Exploring causality in 8 selected African countries. International Journal of Social Economics, vol. 43 No. 3.
- Lee, C.-C., Chang, C.-H., Arouri, M., Lee, C.-C., (2016). Economic growth and insurance development: The role of institutional environments. Economic Modelling, vol. 59.
- Mohyul din, S., Regupathi, A., Abu-Bakar, A., (2017). Insurance effect on economic growth – among economies in various phases of development. Review of International Business and Strategy, vol. 27 No. 4.
- Kanojia, R., (2014). Insurance and its Role in Sustainable Development. Global Journal of Finance and Management, vol. 6, No 3.
- Ho, Ch.-Ch., Huang, Ch., Ou, Ch.-Ya, (2018). Analysis of the Factors influencing Sustainable Development in the Insurance Industry. Corporate Social Responsibility and Environmental Management, vol. 25, No. 4.
- Lapinskaite, In., Radikaite, G., (2015). Analysis of measurement of sustainable development in the insurance company. European Scientific Journal, vol. 11, No.13.
- Moid, S., (2017). Green Bonds: Country Experiences, Challenges and Opportunities. Rajagiri Management Journal, Vol. 12, No. 1.
- Jakubik, P., Uguz, S., (2021). Impact of green bond policies on insurers: evidence from the European equity market. J Econ Finan. Vol. 45.
- Prikazyuk, N., Motashko, T., (2015). Security of the Insurance Market of Ukraine and the Determining Factors. Procedia Economics and Finance, vol. 27.

**Proceedings of the 2021 VIII International Scientific Conference Determinants  
of Regional Development, No 2, Pila 21 - 22 October 2021**

- Tereshchenko, T., (2020). Integrated assessment of insurance market safety as an economic system taking into account the degree influence of each indicator. Strategies, models and technologies of economic systems management in the context of international economic integration: Collective monograph. Riga. Latvia. Retrieved from:  
<http://212.1.86.13/jspui/bitstream/123456789/4186/1/INTEGRATED%20ASSESSMENT%20OF%20INSURANCE%20MARKET%20SAFETY%20AS%20AN%20ECONOMIC%20SYSTEM%20TAKING%20INTO%20ACCOUNT%20THE%20DEGREE%20INFLUENCE%20OF%20EACH%20INDICATOR.pdf>.
- Valinkevych, N., Polchanov, A., Kovalenko, Y., (2020). A strategy of insurance market development in conditions of latent military conflict in Ukraine. Economic Annals-XXI. Vol. 182 Issue 3/4.
- Rates, indices, tariffs, (2019). Retrieved from: <https://index.minfin.com.ua/>.
- National Bank of Ukraine, (2019). Performance indicators of non-bank financial services market participants. Retrieved from <https://bank.gov.ua/ua/statistic/supervision-statist/data-supervision#6>
- The Verkhovna Rada of Ukraine, (1998). On approval of the Program of development of the domestic insurance market for 1998-2000: Resolution of the Cabinet of Ministers of Ukraine of September 14, 1998 № 1428. Retrieved from: <https://zakon.rada.gov.ua/laws/show/1428-98-%D0%BF>.
- The Verkhovna Rada of Ukraine, (2001). On approval of the Program of development of the insurance market of Ukraine for 2001-2004: Resolution of the Cabinet of Ministers of Ukraine of 02.02.2001 № 98. Retrieved from: <https://zakon.rada.gov.ua/laws/show/98-2001-%D0%BF>.
- National Bank of Ukraine, (2015). On approval of the comprehensive program for the development of the financial sector of Ukraine until 2020: Resolution of the Board of the National Bank of Ukraine of June 18, 2015 № 391. Retrieved from: <https://bank.gov.ua/doccatalog/document?id=43352266>.
- The Verkhovna Rada of Ukraine, (2007). On approval of the Procedure for development and implementation of state target programs: Resolution of the Cabinet of Ministers of Ukraine of January 31, 2007 № 106. Retrieved from: <https://zakon.rada.gov.ua/laws/show/106-2007-%D0%BF>.
- Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II). Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0138>.