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CURRENT TRENDS OF INSURANCE OF AGRICULTURAL RISKS IN UKRAINE

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Abstract. *Approaches to understanding the nature of agricultural insurance and risk classification of agricultural producers are systematized. The current state of the agricultural insurance market in Ukraine is reviewed. The analysis of risks insurance of agricultural producers in the context of business processes of the main activity of insurers is carried out. The factors that hinder the formation of an effective system of insurance protection of agricultural producers have been identified. The perspective directions of organization of insurance management of risks of the agrosphere are outlined.*

Keywords: *agricultural insurance, risks of agricultural production, insurance products of agricultural production, insurance premiums, insurance tariff, insurance amount, insurance indemnity.*

Аннотация. *Систематизированы подходы к пониманию сути агрострахования и классификации рисков агропроизводителей. Проведен обзор современного состояния рынка агрострахования в Украине. Осуществлен анализ страхования рисков агропроизводителей в разрезе бизнес-процессов основной деятельности страховщиков. Идентифицировано факторы, тормозящие формирование эффективной системы страховой защиты производителей агропродукции. Определены перспективные направления организации страхового менеджмента рисков агросферы.*

Ключевые слова: *агрострахования, риски агропроизводства, страховые продукты агропроизводства, страховые премии, страховой тариф, страховая сумма, страховое возмещение.*

Introduction. Unfavorable natural and climatic conditions for agricultural production are characteristic for most of the territory of Ukraine. Providing optimal insurance protection against the losses that may result from the implementation of aggro-risks requires the effective solutions in the field of enterprise risk management. Having a long history of applying insurance mechanisms against losses in agriculture, the issues related to the classification of insurance agricultural products remain unresolved – there are no unique rules and standards, the classification of agricultural risks that can be insured. There are no scientific criteria and principles for assessing the risks of the agricultural field, the sizes of insurance tariffs are insufficiently justified, since in most cases they are not equal to the level of risks taken for insurance. In addition, the territorial specificity of agricultural production is not always taken into account, which, in turn, does not provide for zoning of insurance tariffs. Taken into account the insufficient insurance activity of agricultural producers, as potential recipients of damage from the consequences of agricultural production risks, the study of current trends in agricultural insurance in Ukraine is a topical area of scientific research.

Literature Review and Problem Statement. Significant contributions to the study of various aspects of agricultural risk insurance have been made by such scientists as V. Basilevich, M. Demyanenko, S. Navrotsky, S. Osadets, R. Smoleniuk, A. Sholoiko and others.

Thus, E. Panchenko and A. Sholomyi investigated the development of agricultural insurance in Ukraine, its problems and prospects. Agricultural insurance as a

tool for risk management in the agricultural sector is considered by Iu. Samoilik, R. Tykha and V. Kolesnik. The state of agricultural insurance, the effectiveness of insurance companies in the segment of insurance of agricultural risks was investigated by M. Alexandrov, N. Dobizha, N. Rubtsov and other scientists.

However, despite of the sufficiently deep scientific development of the problems of risk management organization of agricultural production, there remains a number of questions that need clarification and refinement.

The purpose of the research is to summarize and evaluate the current state of functioning of the agricultural risk insurance segment, to identify the problems that hinder the implementation of an effective mechanism for insurance protection of property interests of agricultural producers and to determine the vector of modernization of insurance management of agricultural sphere risks.

Results of the Research. Consideration of the research results on the issues of insurance protection organization in the agricultural sphere revealed the existence of two concepts used to describe it, namely, "insurance of agricultural risk" and "agricultural insurance". According to most scientists, their identification is not very correct [1; 2; 3; 4; 5; 6]. According to O. M. Ostapenka, the difference between them is that insurance of agricultural risk covers only legal entities as insurers, while agricultural insurance "covers all economic entities in the agricultural sector (both legal and physical)" [7]. In our opinion, this clarification is not fundamental enough, since the persons who can be insurers are determined by a specific insurance compa-

ny when developing an insurance agricultural product.

In the work we will use the following variant of interpretation of the considered term: agricultural insurance is a special type of property insurance within which agricultural producers (enterprises and citizens) act as insurers, by acquiring an insurance policy from the insurer, protect themselves against specific industries (crop) loss, crops, perennial plantings - in crop production, farm animals - in animal husbandry) that are characterised extremely poor in predictability and catastrophic.

The point that integrates the outlined approaches is to identify the risks covered by the insurance product and the events recognized by the insured events.

Thus, another problem was crystallized - the lack of a well-established classification of risks that can be insured under a risk insurance contract. In general, insurance risk means an event, the moment of occurrence of which is not determined either in time or in space. Such an event is seen as a danger, which creates a potential insurer an incentive to defend against the consequences of its implementation. At the same time, such an event is characterized by the ability to be estimated from the standpoint of the probability of occurrence and the magnitude of the probable loss.

This approach to the understanding of agro-risks nature, suggests that most of the risks inherent in agricultural production are not taken on insurance by domestic insurers, such as risks of non-compliance with the conditions of agricultural technologies, price risks, political risks, etc. The main reason for the "non-insurance" of the above risks is the lack of databases to adequately assess the likelihood of their

occurrence and the setting of insurance rates.

In addition, certain insurance risk classification indicators are used in the practice of domestic insurers and cannot be applied to agricultural insurance. It is incorrect to consider the division of risks according to sources of origin (internal, external, and only external are used in insurance); in terms of insurance coverage (individual, universal and specific). In our opinion, for agricultural insurance there are specific risks, others may be insured for other types of property insurance (for example, insurance of buildings and equipment, insurance of risks related to personnel, etc.).

An interesting approach to the classification of agricultural production risks was developed by M. Vodianenko [8], who offered to divide the risks depending on the stage of crop development into:

- risks arising at the embryonic stage of development;
- risks arising at the youth stage;
- risks arising at the stage of maturity;
- risks arising at the stage of reproduction;
- the risks arising at the stage of old age.

The basis for isolating these types of risks is based on the difference in the amount of financial losses incurred by agricultural producers. The logic of classification is that the older the stage of agricultural development, the greater the losses incurred (incurred costs) the commodity producer, which is defined by the peculiarity of agricultural technology, "which involves the execution of a certain sequence of technological operations at each stage of development of agricultural crops" [9]. A similar approach can be applied to the classification of livestock risks, since for

the purposes of insurance they use the division of animals into young animals, productive and livestock, separately, as the object of insurance is defined by breeding and high-value animals.

Given the above, further scientific research should be carried out in the direction of reducing the list of classification features of agricultural risks in order to optimize (avoid duplication of insurance of the same risks by different insurance products) and completeness of insurance protection of agricultural producers. Within this framework, it is proposed to use the following risk classification in agricultural insurance by nature of their occurrence when developing insurance products:

- 1) natural and climatic risks;
- 2) agricultural and biological risks;
- 3) technogenic risks;
- 4) country risks, including (political and economic).

According to the National Financial Services Commission, on February 12 in 2019, 64 insurance companies were licensed to provide voluntary agricultural insurance services [11]. Compared to the data on 01.10.2018, two insurance companies lost their license, and at the same time, three insurers were issued licenses for insurance of agricultural risks [10].

Table 1 presents data which characterize the state of crop insurance in the period 2005-2018. These tables show that 2016 was the year when the agricultural insurance market showed some growth, recorded a steady movement in the following 2017 and 2018. We see an increase in most of the indicators presented. It should be noted that in 2018 there was a tendency to increase the number of concluded contracts of insurance of agricultural risks - the total increase, comparing to 2017, was 26 percent.

Table 1

Insurance of agricultural crops in 2005-2018

Indicators	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of contracts	910	1330	4397	1637	1980	1217	2710	1936	1722	1392	1062	793	957	1207
Area, thous. ha	390	670	2360	1171	510	553	786	727	869	732	689	700	661	974
Sum insured, mln.UAH	н/д	н/д	н/д	н/д	н/д	н/д	н/д	н/д	н/д	3 055	3 969	6 240	5 933	6 675
Sum of premium, mln.UAH	12,8	28,5	116,7	155,4	42,0	72,1	136,3	130,4	135,4	72,8	77,7	157,0	204,3	208,8
Subsidy, mln.UAH	5,8	12,5	47,8	72,8	0	0	0	0,086	0	0	0	0	0	0
Level of payments	н/д	н/д	н/д	н/д	36,5%	50,9%	28,0%	41,0%	9,7%	7,6%	12,9%	44,2%	4,9%	4,2%
Average premium rate	3,8%	н/д	4,5%	4,9%	3,2%	3,8%	3,7%	3,8%	3,1%	2,4%	2,00%	2,5%	3,4%	3,1%
Cost of insurance 1 ha, UAH.	32,82	42,54	49,45	132,71	82,35	130,38	173,41	179,37	155,81	99,45	112,77	224,29	309,08	214,37
Course \$/UAH [11]	5,05	5,05	5,05	5,22	8,00	7,91	7,98	7,99	7,99	12,95	22,91	26,02	26,54	28,27
Sum of insurance, mln. \$	н/д	н/д	н/д	н/д	н/д	н/д	н/д	н/д	н/д	235,9	173,3	239,8	223,5	236,1
Sum of premium, mln. \$	2,5	5,6	23,1	29,8	5,3	9,1	17,1	16,3	16,9	5,6	3,4	6,0	7,7	7,4
Cost of insurance 1 ha, \$	6,50	8,42	9,79	25,42	10,29	16,48	21,73	22,45	19,50	7,68	4,92	8,62	11,65	7,58

Source: [10, 12]

For the accuracy of the presented data and to obtain relevant data for analysis when characterizing the indicator "number of insurance contracts", in the case where several agricultural contracts were insured under the insurance contract, that is, one contract - one culture. In total, in 2018 year, insurance companies concluded 1 207 crop insurance contracts and perennial crops, in particular, 661 for winter and 546 for spring and summer [10].

In terms of "insurance premiums" in hryvnia equivalent, we also note a steady upward trend over the last four years. Thus, in 2018, it amounted to 2.2%, growth in monetary terms amounted to 208.8 million UAH. However, if we talk about the value of this indicator in dollar terms, we note its decrease by \$ 0.3 million. (\$ 7.4 million, down 3.9% from 2017), such changes are due to the hryvnia devaluation in 2018.

An interesting indicator is the cost of insurance of 1 ha of insured area, it is clear that in terms of crops, the data on this indicator will differ significantly. As can be seen from the table, the value of 1 hectare in UAH shows sinusoidal values, and the same pattern is observed in dollar terms. Such fluctuations in value do not directly correlate with any of the indicators presented, most likely it is the equilibrium price prevailing in the agricultural insurance market at a particular point in time (the buyer agrees to pay and the seller sells) or the consequence of a difference in

the list of agricultural types and, respectively, of different values that form the risk insurance portfolio of a particular underwriting year.

The data presented in the table indicate the non-prevalence of the use of insurance products by agricultural producers for protection against risks and forming the basis for effective functioning. Some efforts of the state to stimulate the development of the agricultural insurance market by introducing a subsidy mechanism - compensation of 50% of the amount of insurance premiums due to agricultural producers, did not give a tangible result.

As can be seen in Table 1, during the independence of Ukraine, there was two attempts to introduce state-backed risk insurance for farmers from 2005 to 2008 and in 2012. These steps had a positive effect on the volume of collected insurance premiums in 2005-2008, however, we note their sharp fall in 2009 to 42.0 million UAH, a decrease of almost 300% compared to 2008.

In 2018, the size of the insured area of crops significantly increased. The increase was mainly due to winter wheat insurance, winter rape and sunflower, and to a small extent - spring wheat and sugar beet. Crops were insured on a total area of 974 thousand ha [9].

As shown in Figure 1, the amount of insurance premiums collected in 2018 continues to grow to UAH 208.8 million, which is 2.2% more than in 2017.

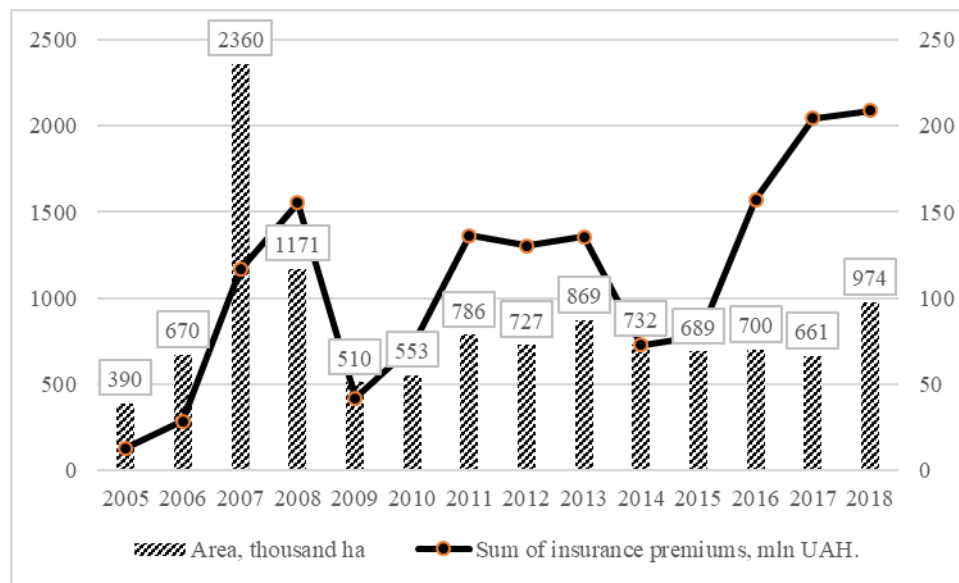


Figure. 1. Insured agricultural areas and collected insurance premiums in 2005-2018

Source: made by the author [10]

In 2018 the total sum insured (or the amount of total insurance obligations of insurers) increased by UAH 0.742 billion compared to 2017. Overall, the insurers' liabilities under the insurance contracts of agricultural producers in 2018 increased to UAH 6.675 billion, which is 12.5% more than in 2017 (Fig. 2).

Detailed information on the activities of insurance companies providing agricultural insurance services in Ukraine is presented in Table 2. In 2018 underwriting year, agricultural insurance was provided by 12 insurance companies. In terms of the number of concluded contracts in 2018, the PZU is the leader - 345 contracts (18.4% of the total market), the lowest value in this indicator in IC "Mega-Garant" - only 1 insurance contract (0.1% of the market).

In terms of the area covered by insurance protection, in the first place PJSC "Insurance Company" "Ingo Ukraine" - 203567 ha, which is about 21% of all insured areas, the second place is

occupied by PJSC Insurance Company "Univer-salna" - 195494 hectares (20.1% from all insured areas).

It should be noted that the company concluded 126 contracts with a total liability of UAH 2.156 billion, which is 32.3% of all insurance liabilities under agricultural insurance contracts, with this insurer accumulating 40.2% of the total amount of insurance premiums collected, and payments are only 2% of the amount of compensation paid under agricultural insurance contracts.

By volume of insurance premiums collected, the three leaders include PJSC Insurance Company «Universalna» - UAH 84.012 million, PZU - UAH 33.820 million and PJSC «Ingo Ukraina» - UAH 21.739 million PJSC Insurance Group «TAS» in 2018 collected UAH 957.06 thousand, which is only 0.46% of the total amount of premiums accumulated by domestic insurers.

Table 2

Summary data of insurance in section of insurance companies in 2018

Company	Number of contracts	Area		Sum insured		Sum of premium		Average premium rate	Payments		Level of payments, %
		ha	%	UAH	%	UAH	%		UAH	%	
AXA	179	73237	7,5	639401679	9,6	13521794	6,5	2,10%	1907215	21,98	14,1
PZU	345	179335	18,4	1520716749	22,8	33820280	16,2	2,20%	3577014	41,22	10,58
ASKA	158	140508	14,4	562676959	8,4	17434080	8,3	3,10%	1635596	18,85	9,38
Brockbisness	62	120334	12,4	234337861	3,5	3905189	1,9	1,70%	0	0,00	0
Garant-Systema	2	2	0,0	31300	0,0	824	0,0	2,60%	0	0,00	0
Gardian	35	12549	1,3	99652315	1,5	4616568	2,2	4,60%	0	0,00	0
Ingo Ukraina	236	203567	20,9	872278707	13,1	21739007	10,4	2,50%	499783	5,76	2,3
Kraina	52	39824	4,1	364157278	5,5	15276166	7,3	4,20%	884725	10,19	5,79
Mega Garant	1	1004	0,1	13501000	0,2	54004	0,0	0,40%	0	0,00	0
TAS	6	1725	0,2	22065994	0,3	957060	0,5	4,30%	0	0,00	0
UASK	5	6224	0,6	189544048	2,8	13506637	6,5	7,10%	0	0,00	0
Universal'na	126	195494	20,1	2156542818	32,3	84012413	40,2	3,90%	173994	2,00	0,21
Overall/Average	1 207	973803	100,0	6674906708	100,0	208844022	100,0	3,10%	8678327	100,00	4,16

Source: made by the author [10]

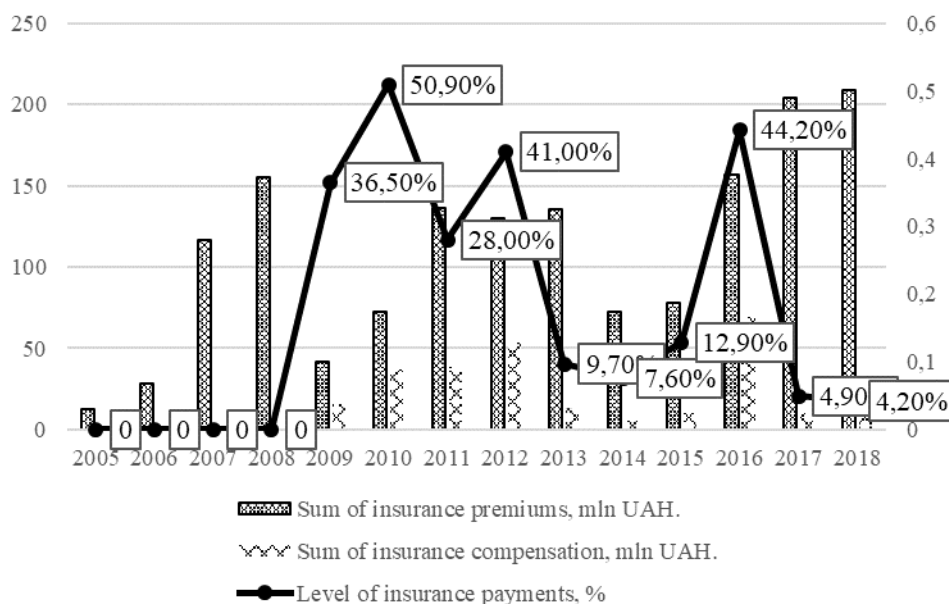


Fig. 2. Dynamics of insurance premiums, insurance indemnity payments and value of insurance indemnity payments for the period 2005-2018.

Source: made by the author in [10]

By volume of insurance premiums collected, the three leaders include PJSC Insurance Company «Universalna» - UAH 84.012 million, PZU - UAH 33.820 million and PJSC «Ingo Ukraina» - UAH 21.739 million PJSC Insurance Group «TAS» in 2018 collected UAH 957.06 thousand, which is only 0.46% of the total amount of premiums accumulated by domestic insurers.

Analyzing the market of agricultural insurance by price index, we see that the average size of the insurance tariff is 3.1%. The most expensive insurance services for agricultural insurance are offered by PJSC «UASK» - 7.1%, which is almost 2.3 times higher than the average in the market. The cheapest services, with a rate of 0.4%, are offered by PJSC Insurance Company "Mega Garant", which is 7.75 times cheaper than the average for this segment of the insurance services market. Leaders of agricultural insurance are PZU and PJSC "Ingo Ukraine" and they provide services in the range of 2.1-2.5%, which is lower than the existing ones in the market, and PJSC "Universalna" offers services at the rate of 3.9%, which is 0.8 pp higher than the market average. The average insurance premium rate for the whole underwriting year was 3.1%, in particular, 3.6% - for the winter period and 3.0% - for the spring-summer period.

The highest level of payments due to the consequences of insured events is noted in the insurance company AXA - 14.1% with the average on the market - 4.16%. Most of the companies that submitted their reporting data did not have payments in the 2018 underwriting year, i.e. the accumulated amount of insurance premiums generated a positive financial

result for this type of insurance. As can be seen from Table 3, 2018 was financially favorable for agricultural insurers. Considering the state of agricultural insurance in the territorial context, we observe that the leaders in the number of concluded contracts of insurance of agricultural risk are Dnipropetrovsk and Kirovograd regions - 125 units and 108 pieces, respectively. They are followed by Chernihiv (83), Vinnytsia (82), Poltava (79), Khmelnytsky (79) and Sumy (78) regions [10]. Table 3 provides information on the areas of leaders in partial agricultural risk insurance coverage in 2018.

In the 2018 underwriting year, payments were made in 10 regions of Ukraine, the most unprofitable is the Chernihiv region, where data on this indicator amounted to 93.82%, and the least unprofitable - Sumy region with an indicator of 0.89%. But in most areas insurance companies do not have insurance coverage. The lack of insurance protection activities for agricultural producers in Transcarpathian region is absence of insurance contracts and it is really a problem.

Details of the status of insurance compensation paid by insurers are shown in Figure 3. The information provided shows that only 50% of insurers who sell insurance products for agricultural insurance paid insurance claims in 2018. Underwriting year in agricultural insurance covers 2 agrarian seasons: insurance of winter field crops for the wintering period, actually sown in the previous calendar year and insurance in spring and summer of the current year.

Table 3

Regions leaders in agricultural producers' risk insurance performance in 2018

Region	Indicator						
	Number of contracts, pcs.	Застрахована площа, тис. га Insured area, thousand ha	%	Insurance premiums collected, UAH mln	%	Compensation, UAHmln.	%
Dnipro	125	92,5	9,5	22,6	10,8	1,1	12,0
Kirovogrds	108	—	—	—	—	—	—
Chernihiv	83	80,4	8,3	10,4	5,0	0,564	6,5
Vinnutsia	82	—	—	11,1	5,3	2,4	28,1
Poltava	79	78,6	8,1	19,3	9,2	—	—
Khmelnysk	79	115,8	11,9	13,1	6,3	—	—
Sumy	78	67,4	6,9	17,6	8,4	0,156	1,8
Kharkhiv	—	83,2	8,5	-	—	—	—
Kherson	—	—	—	23,8	9,2	0,727	8,4
Mykolaiv	—	—	—	15,6	7,5	—	—
Ternopil	—	—	—	11,3	5,4	—	—
Odesa	—	—	—	—	—	1,8	20,3
Lugansk	—	—	—	—	—	1,1	13,0
Donetsk	—	—	—	—	—	0,638	7,3
Zhytomyr	—	—	—	—	—	0,217	2,5
Volyn	—	—	—	—	—	0,086	0,1

Source: made by the author [10]

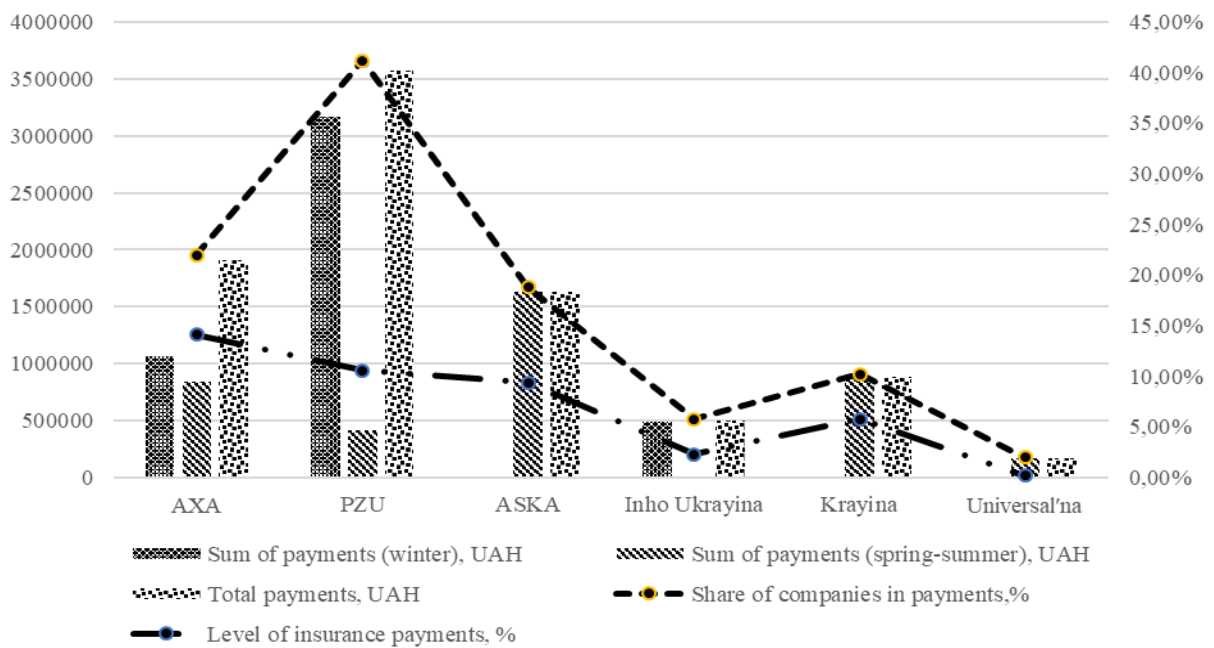


Fig. 3. Insurance payments in section of insurance companies in 2018

Source: made by the author in [10]

All six companies have payments in the spring-summer period, only half of them in the winter, but the total payments during this period are UAH 752337 higher than in the spring-summer period, which indicates the riskiness of winter

crop insurance and the predominance in the insurance portfolio of insurers cost insurance contracts for sowing in the spring.

According to the data available for the study, the average rate of payments to insurance companies in the 2018 underwriting year was 4.2%, in particular, 8.1% - in winter and 2.6% - in spring and summer.

Conclusion. The given research made it possible to conclude that it is necessary to form an effective organizational and economic mechanism for insurance of risks in the agricultural sphere. For the period 2005-2018, the total number of contracts is steadily falling every year, with the exception of 2017-2018. This is a testament to the decline in the attractiveness of agricultural insurance itself for a number of reasons, namely: the imperfection of the legislative framework for insurance of agricultural production risks; insufficient level of solvency of agricultural producers and their dependence on attracted (borrowed funds), which restrains the demand for agricultural insurance products; lack of effective support of the state of agricultural producers in the part of compensation of paid insurance premiums; lack of statistical base necessary for calculation of insurance tariff rates in terms of territories; imperfection of the list of insurance agricultural risks, which prevents the optimality and accessibility of insurance protection; the complexity of the procedure of proving to the agro-producer the fact of compliance with agricultural and technical conditions.

The development of risk insurance for agricultural producers is constrained by a

number of factors that have both an objective (distrust of the agricultural producers for insurance as an effective tool for reducing loss-making activities, low solvent demand of agricultural producers) and a subjective nature (suboptimal list of risks that are not taken into account. insurance tariffs, lack of government support through subsidy mechanism, etc.).

On the whole, the insurance market of the agro-risk insurance market was determined by insurance companies, which are leaders both in terms of collected insurance premiums and insurance claims paid. The offered insurance products are able to satisfy the need of agricultural producers for insurance protection and, at the same time, to provide commercial attractiveness for domestic insurers.

In order to improve the current practice of providing services in agricultural insurance, we apply the principle of good faith, which implies the introduction of clear (unambiguous) rules for insurance of agricultural risks, preventing the manipulation of the terms of insurance contracts, preventing tariff disparities etc. to increase the confidence of agricultural producers in insurance companies.

Considering the high probability of realization of risk events in agricultural production and its low profitability, the subject of further scientific research should be the development of an effective model of insurance of risks of agricultural producers. The focus should be on encouraging agricultural producers to use insurance tools to support the profitability of their own operations, and insurers to step up efforts to improve this toolkit.

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