


“Current trends in agricultural insurance market operation in Ukraine”

AUTHORS

Olena Prokopchuk  <https://orcid.org/0000-0001-7405-2469>

 <http://www.researcherid.com/rid/J-8133-2018>

Yulia Nesterchuk  <https://orcid.org/0000-0001-7085-2979>

 <http://www.researcherid.com/rid/J-9469-2018>

Yuriy Tsymbalyuk  <https://orcid.org/0000-0002-5792-0866>

 <http://www.researcherid.com/rid/J-8548-2018>

Oleksandr Rolinskyi  <https://orcid.org/0000-0002-0276-3218>

 <http://www.researcherid.com/rid/G-7431-2018>

ARTICLE INFO

Olena Prokopchuk, Yulia Nesterchuk, Yuriy Tsymbalyuk and Oleksandr Rolinskyi (2019). Current trends in agricultural insurance market operation in Ukraine. *Problems and Perspectives in Management*, 17(3), 57-75.
doi:[10.21511/ppm.17\(3\).2019.05](https://doi.org/10.21511/ppm.17(3).2019.05)

DOI [http://dx.doi.org/10.21511/ppm.17\(3\).2019.05](http://dx.doi.org/10.21511/ppm.17(3).2019.05)

RELEASED ON Thursday, 25 July 2019

RECEIVED ON Sunday, 05 May 2019

ACCEPTED ON Monday, 03 June 2019

LICENSE



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

JOURNAL "Problems and Perspectives in Management"

ISSN PRINT 1727-7051

ISSN ONLINE 1810-5467

PUBLISHER LLC "Consulting Publishing Company "Business Perspectives"

FOUNDER LLC "Consulting Publishing Company "Business Perspectives"



NUMBER OF REFERENCES

31



NUMBER OF FIGURES

15



NUMBER OF TABLES

1

© The author(s) 2025. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Received on: 5th of May, 2019

Accepted on: 3rd of June, 2019

© Olena Prokopchuk, Yulia
Nesterchuk, Yuriy Tsymbalyuk,
Oleksandr Rolinskyi, 2019

Olena Prokopchuk, Ph.D. in
Economics, Associate Professor,
Department of Finances, Banking and
Insurance, Uman National University
of Horticulture, Ukraine.

Yulia Nesterchuk, Doctor of
Economics, Professor, Dean
of Faculty of Economics and
Entrepreneurship, Uman National
University of Horticulture, Ukraine.

Yuriy Tsymbalyuk, Ph.D. in
Economics, Associate Professor,
Department of Marketing, Uman
National University of Horticulture,
Ukraine.

Oleksandr Rolinskyi, Ph.D. in
Economics, Associate Professor,
Department of Finances, Banking and
Insurance, Uman National University
of Horticulture, Ukraine.



This is an Open Access article,
distributed under the terms of the
[Creative Commons Attribution 4.0
International license](https://creativecommons.org/licenses/by/4.0/), which permits
unrestricted re-use, distribution,
and reproduction in any medium,
provided the original work is properly
cited.

Olena Prokopchuk (Ukraine), Yulia Nesterchuk (Ukraine),
Yuriy Tsymbalyuk (Ukraine), Oleksandr Rolinskyi (Ukraine)

CURRENT TRENDS IN AGRICULTURAL INSURANCE MARKET OPERATION IN UKRAINE

Abstract

Creation of a strong agricultural insurance market in Ukraine as an effective resource and instrument to strengthen the agrarian sector of economy from the point of view of minimizing the risks affecting the commercial performance is one of the key stages in the development of the Ukrainian insurance protection system in the agrarian sector of economy. At the same time, the Ukrainian agricultural market is still in the stage of formation and develops randomly, with no well-defined development strategy and proper state support. The aim of the paper is to assess the current trends in the operation of the Ukrainian agricultural insurance market.

The authors study the peculiarities of the formation, the current stage of functioning and further development of the agricultural insurance market in Ukraine. The results of the study reveal the principle of the structural formation and functional characteristics of the agricultural insurance market services in Ukraine – its mono-component was discovered – in view of the fact that it is represented only by the system of insurance of agricultural crops and perennial plantings (with the domination of field crops) and the optional functioning of the latter – one third of the market forms formal compulsory insurance in the context of state finance programs for farmers.

The authors summarize the complex of reasons that keep the development of the Ukrainian agricultural insurance market grown and systematize its peculiarities that are typical for this stage of the agrarian sector development. Researchers note the sufficient development of agricultural insurance market tooling in Ukraine at this stage – the market uses a sufficient set of insurance products that according to their qualitative characteristics meet international standards in terms of both classical and parametric insurance schemes.

Thus, the conducted research allowed to form the directions for the development of the agricultural insurance market in Ukraine. The key one among them was its further institutional development within the framework of private-public partnership, which is proved by positive international experience and stimulate interests' unity of this market participants.

Keywords

agricultural insurance, insurance coverage, agrarian sector, farmers, risks, risk management, insurance products, insurance companies

JEL Classification G22, G28, Q13, Q18

INTRODUCTION

One of the key features of agriculture is its dependence on natural conditions. Along with price volatility, the presence of commercial risk and raiding, Ukrainian farmers are also suffering from weather freaks and features of used production assets – biological assets.

Insurance is called to minimize losses from the latter. That is a system of economic relations to guarantee insurance protection in order to ensure the income stability and the available property conservation.

At the same time, the agricultural insurance market in Ukraine is still undeveloped, and insurance products are not well-received among

farmers. As a result, a certain imbalance arose – a powerful development of the agri-industrial complex in Ukraine in recent years has not been accompanied by the proper development of the insurance market, which goes against the generally established international practice. After all, the majority of countries in the world where agriculture is successful (the USA, Canada, Spain, China, etc.) are characterized by a high level of agricultural insurance development. Instead, Ukraine is an exception from the general rule that determines the need to strengthen scientific research in order to deepen theoretical and methodological principles and methodological and organizational aspects of agricultural insurance development in Ukraine in order to ensure the level of its distribution at least comparable to that of developed agrarian countries.

1. THEORETICAL BASIS

The control system of complex economic processes in the agrarian sector of Ukrainian economy needs further improvement, which is conditioned by transformational processes in the domestic economy, and must ensure the process continuousness of representation of agricultural productivity, stability of agricultural production and producers' income, promote food security and, within certain limits, economic, environmental and energy security of the state, as well as the formation of social economic foundations for rural development.

A market management system *a priori* predetermines the need for well-developed and effectively functioning insurance market, since it performs functions that are related to protecting the interests of the population and business entities. Ukraine confidently moves forward and applies new tools and approaches for the development of the agrarian sector of economy.

Currently, Ukraine's agricultural insurance market, by its qualitative characteristics, almost holds out the foreign analogues. In particular, there is used a sufficient set of insurance products that, according to their qualitative characteristics, meet international standards, both in the context of the classical and parametric insurance schemes, the preconditions for the objective assessment of the crops taken for insurance, as well as the determination of losses due to the occurrence of insured events.

Various aspects of the functioning of such an important financial instrument as agricultural insurance market were investigated by a number of scholars and practitioners, among which

Herasymenko and Zhemoida (2009), Martseniuk-Rozaronova (2010), Navrotskyi (2012), Nesterchuk et al. (2018), Pikus et al. (2018), Polchanov (2013), Potiko (2017), Sholoiko (2014), Vilenchuk (2014) and others should be pointed out.

In their works, the researchers studied the main tendencies of the Ukrainian agricultural insurance market in general and certain aspects of its development, generalized the historical aspects of its formation and start-up, studied the peculiarities of insurance legislation, as well as the specifics of the investigated market structure.

Some scientists have focused on the characteristics of the agricultural insurance market in terms of insurance schemes, in particular, classical and parametric ones (Barnett et al., 2008; Sholoiko, 2009; Odening & Shen, 2014). Other researchers were limited to market research by taking on the analysis of insurance systems – agricultural crops and perennial plantings and farm animals (Dandekar, 1977; Vilenchuk, 2014; Porrini & De Masi, 2019).

Some Ukrainian scholars focused on the study of insurance products and insurance schemes that provide insurance protection for agricultural commodity producers, in particular, Nesterchuk, Prokopchuk, Tsymbalyuk, Rolinskyi, and Bilan (2018), Sholoiko (2014).

The role of the state and the need for state support for the development of the insurance protection system in the agrarian sector of economy are quite topical issues in the achievements of scientists (Martseniuk-Rozaronova, 2010). It should be noted that the application of subsidy programs, in particular, insurance premiums, reinsurance, is common world practice of promoting agricultural insurance market development (Martseniuk-

Rozaronova, 2010, p. 92). Governments of different countries approach to the realization of this issue in different ways. At the same time, it should be noted that the most widespread among them is subsidy payment to cover part of the insurance premium to insurers. In general, for many countries, so to speak, the standard is to apply the practice of state support for the agricultural insurance market. These countries include the United States, Canada, and the EU. An example of a strong and rapid development of the agricultural insurance market in international practice is the Chinese one. Over the last 5 years, the Chinese agricultural insurance market has moved forward and is now the second largest in the world after the US (in 2017, the amount of collected insurance premiums reached USD 5.7 billion) (Kenderdine, 2018; Rehman & Jian, 2014). The country has succeeded in establishing an innovative public-private partnership that promotes sustainable agricultural development, which in turn stimulates China's agricultural productivity growth against the background of the global food security challenge (Kenderdine, 2018, p. 334). The development of the agricultural insurance market in China is supported by the government through subsidy payment to cover part of the insurance premiums to insurers (a total of 50%), one of the most acceptable global practices in stimulating the development of agricultural insurance market.

The undeveloped agricultural insurance market due to the imperfect mechanism of its functioning and the lack of state support complicates the economic situation in the country. World practice shows that solving any problems is on one plane with state support (Dalhaus et al., 2018; Halcrow, 1948; Koschyk & Wilson, 2013). This statement is also quite relevant for Ukrainian realities – half of all market premiums collected in 2017 are bonuses of insurance related to agricultural producers' financing programs. Therefore, at the present stage, domestic agricultural enterprises require the practical implementation of state subsidy for insurance premiums, but for this purpose it is necessary to review the whole system of insurance protection and create an entirely new center for agricultural risk insurance management.

A number of scientists are focusing on the study of options combination for the formation of an in-

surance protection system in the agricultural sector of economy (Hudz, 2015). The study of foreign experience on this issue shows that in practice, different countries apply three key options for state regulation of the development of the insurance protection system in the agrarian sector of economy: an option of system state regulation, an option of the formation of an effective private-public partnership and the option of conducting a passive state policy (Hudz, 2015, p. 221). At the same time, more and more countries in the world tend to adapt the experience of those countries, where, in contrast to direct state support, a system agricultural insurance model with state support was introduced to agricultural producers.

Some theoretical and practical aspects of agricultural insurance are broadly investigated by scholars among whom it is advisable to identify works of Mahul (2001, 2010), Santeramo (2018), Turvey (2001), Wang (2012), Ziemele and Voronova (2013). In their works, scientists largely focus on the general aspects of functioning of the agricultural insurance system.

It should be noted that the works of individual scientists thoroughly cover issues of insurance schemes used in agricultural insurance. This aspect is covered by the researchers in the context of classical, parametric and specific scheme of insurance. Parametric schemes in agricultural insurance are characterized by significant practices, that is, the study of index insurance products for the agrarian sector. These questions have been examined in depth by such scholars as Barnett and Mahul (2007), Chantararat et al. (2007), Mentel et al. (2018), Sarris (2013), Matsuda and Kurosaki (2019).

The transparency of index insurance, its simplicity and the lack of necessity to travel to the estimators' place led to the significant popularity of such insurance in the world. In a very short time (since 2016), this product has gained popularity in Ukraine.

At the same time, the realities of today are such that the Ukrainian market of agricultural insurance is currently disparate, not focused on solving specific problems and still does not use the available resources and its capabilities to the full extent, and insurance products are not in good demand

among farmers. In addition, parametric insurance products in the Ukrainian market of agricultural insurance are innovative and are in the stage of implementation. Given this, at this stage, the issue of the use of newest practices and methods in agricultural insurance requires more and more attention.

Consequently, the risk management system based on insurance should be an integral part of agriculture production. The development and implementation of the latter is an urgent need not only for agricultural producers, but also for the state. On the other hand, the distribution process of agricultural insurance in Ukraine is carried out too slowly, even despite a number of technical assistance projects from international financial institutions and donor countries.

2. AIM

The aim of the paper is to assess the current trends in the functioning of Ukrainian agricultural insurance market.

3. RESULTS

3.1. Modern vectors of the agrarian sector of Ukraine's economy

3.1.1. Impact of climate changes on the development of agriculture production

Large-scale weather calamities are a major obstacle to Ukrainian agricultural producers who are often of national or regional nature. Moreover, it should be noted that their frequency has increased significantly in recent years.

The effects of global climate change make them fall increasingly in Ukraine. In many regions, temperature rise and drought can become factors that will ultimately limit the agricultural productivity – one of the most important sectors of the Ukrainian economy. The threats to the agrarian sector of Ukraine's economy caused by climate change are grouped in Figure 1.

This situation leads to a high level of uncertainty in agricultural business, increases the cost of credits

Source: Author's generalization.

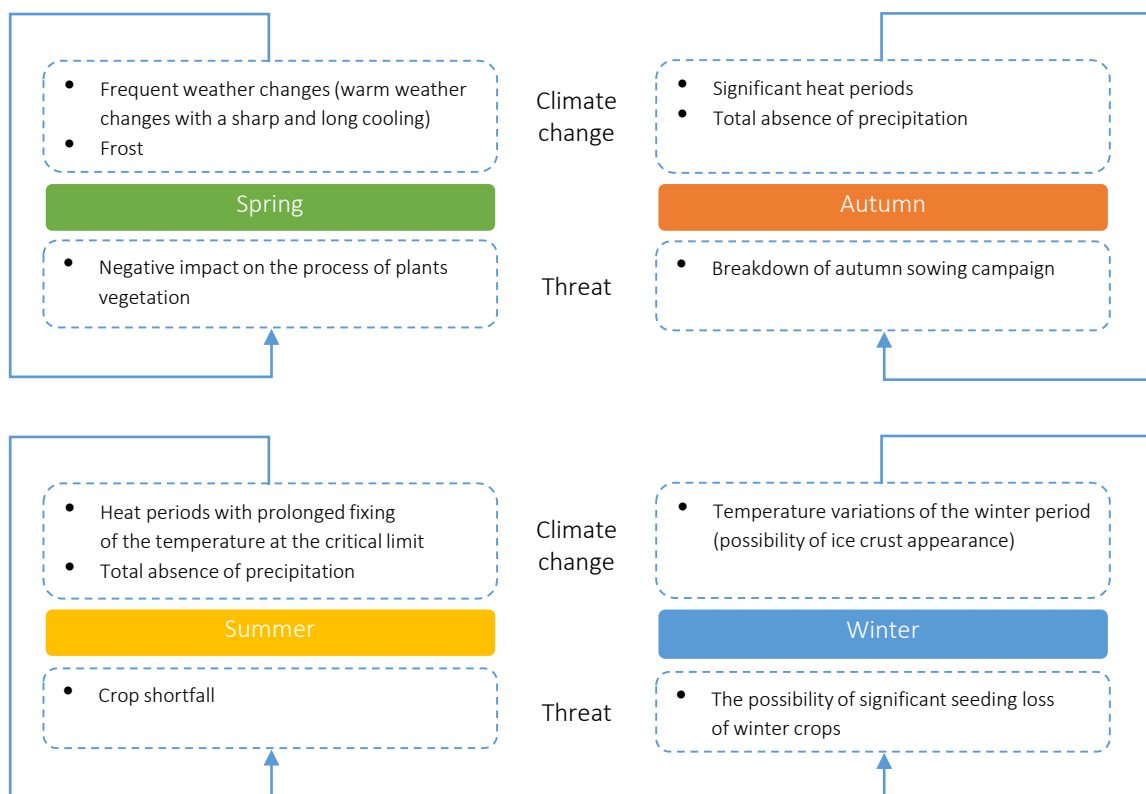


Figure 1. Threats to the agrarian sector of the Ukrainian economy caused by climate changes

Table 1. Historical retrospective of large-scale weather-related calamities faced by Ukrainian agricultural producers

Source: Author's generalization.

Weather calamities	Period	Region of coverage	Results	Main point
Prolonged low temperatures and winter temperature changes	Winter 2002–2003	All over the country	Significant loss of winter crops	Temperature fluctuations (alternating temperatures from positive to negative indicators), which led to the formation of an ice crust and the freezing of winter wheat
Drought	Summer 2007	South and east of the country	Loss of the harvest	Prolonged absence of precipitation against the background of high air temperatures
	Autumn 2012 and 2015	All over the country	The threat of autumn sowing campaign	Prolonged absence of precipitation against the background of high air temperatures
Flood	Summer 2008	West of the country	Loss of the harvest	Prolonged intense rain storms
	Winter 2017	West of the country	Loss of winter crops	Intense precipitation in the form of continuous heavy rain and snow

without which agricultural production is impossible and increases the proportion of non-returns.

Historical retrospective of large-scale weather-related calamities faced by Ukrainian agricultural producers is presented in Table 1.

Analyzing Table 1, it should be noted that part of the damage caused by weather calamities could be covered by insurance companies in the form of insurance payments, which would be a great help for Ukrainian agriculture. In an attempt to minimize the latter, the state is forced to systematically resort to financial assistance in the form of direct payments from the reserve fund. The mentioned budget fund is formed for unforeseen expenditures that are not permanent and could not be foreseen when drafting a budget (Sholoiko, 2014).

By making direct payments, the state actually stimulates the development of the agricultural insurance market due to the key characteristics of the latter: the lack of appropriate documentation and compliance with production technology; the lack of requirements for appropriate acts of agricultural producers so as to avoid or minimize the risks.

The effectiveness of reimbursement to agricultural producers through the agricultural insurance system is more significant compared to the state program in the form of direct payments from the reserve fund of the budget.

It should be noted that the funds of the state budget reserve fund for measures to eliminate the consequences of emergencies, which are natural, are devoted disproportionately to losses, covering on average no more than one third of the size of the latter, and also without consideration of the actual state of insurance level in the region, which did not stimulate farmers to take part in insurance and caused low compensation efficiency of part of paid insurance premiums (Figure 2).

Today, the agrarian sector remains one of the most promising and active sectors of the Ukrainian economy's development, providing the state with leading positions in the world global food market, a guarantor of world global food security and profits and domestic economic growth. At present, the agrarian sector of economy accounts for 42% of the currency export revenues of Ukraine (domestic exports in 2017 reached a level of USD 36.4 billion, of which USD 15.2 billion was accounts for agricultural products).

The positive dynamics of agriculture production development in recent years is mainly due to two key factors: the implementation of effective innovative technologies and the presence of relatively favorable weather conditions in recent years.

At the same time, all this requires a stable financial support. World practice shows that recourses directed at the development of agricultural production must be supported by agricultural insur-

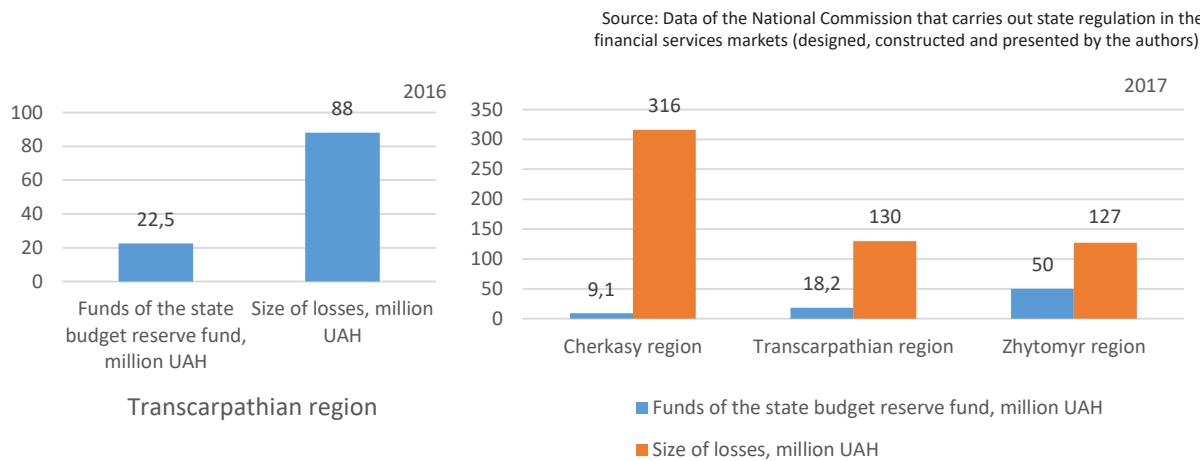


Figure 2. The size of losses and funds of the state budget reserve fund for measures to eliminate the consequences of natural calamities in the regional context in 2016–2017

ance (Figure 3), which guarantees the possibility of their return to creditors in case of occurrence of insured events.

In Ukraine, this instrument for minimizing production risk is still not too demanded by agricultural producers. And this greatly enhances their lack of money and limits the ability of the banking sector and investors to properly finance the agrarian sector. Against the background of its dynamic development, this problem has become much more widespread in recent times, and therefore needs to be solved.

3.2. Ukraine's agricultural insurance market

3.2.1. Features of Ukraine's agricultural insurance market functioning

The most general criteria that make it possible to investigate the state of the insurance market, its structure and level of development are indicators of the number of concluded insurance contracts, the amount of insurance premiums and insurance indemnities, as well as the same indicators in the calculation of the insurance contract (Figure 4).

Agricultural insurance

A mechanism for the risk minimization in the agrarian sector of economy and ensuring the stability of agriculture production as an important condition to ensuring food security of the country.

An effective risk management mechanism in the agrarian sector of economy, which ensures the stability of production and incomes of agricultural producers and sustainable development of the agrarian sector of the economy.

One of the most effective ways of risk management, which makes it possible to combine the interests of participants of the agricultural insurance market and the state most favorably in order to ensure sustainable economic growth, citizens well-being and social protection.

A way to ensure the stability of agriculture production and incomes of the rural population as a prerequisite for sustainable economic growth and ensure the country's food security, as well as the well-being of its citizens, by maximizing the opportunities of the insurance market and the effective use of state resources.

Figure 3. Agricultural insurance definitions

Source: Data of the National Commission that carries out state regulation in the financial services markets (designed, constructed and presented by the authors).

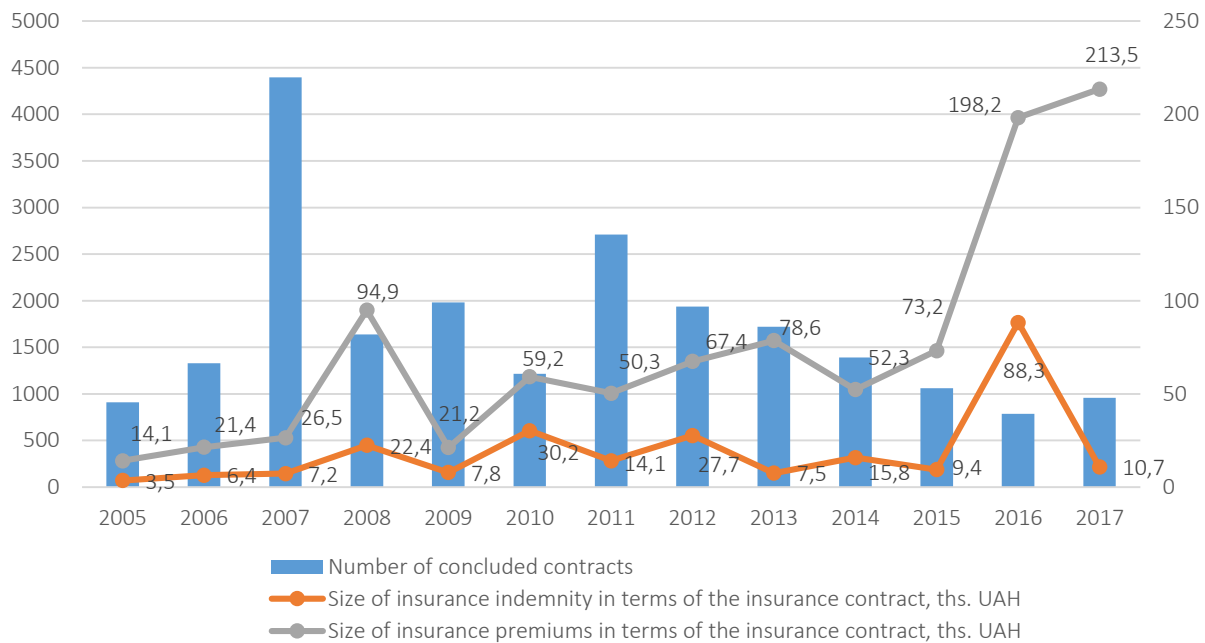


Figure 4. Trends in the market of Ukraine's agricultural insurance services in 2005–2017

Considering the peculiarities of the agricultural insurance market functioning, it should be noted that this segment of the Ukrainian insurance market in 2017 was characterized by changes to improve its main indicators. In particular, the number of insurance contracts for agricultural crops and perennial plantings in 2017 increased to 957 pcs. The largest number of contracts was concluded in Ternopil region – 98. According to this indicator, Dnipropetrovsk region ranks second – 94, and Poltava region ranks third – 75.

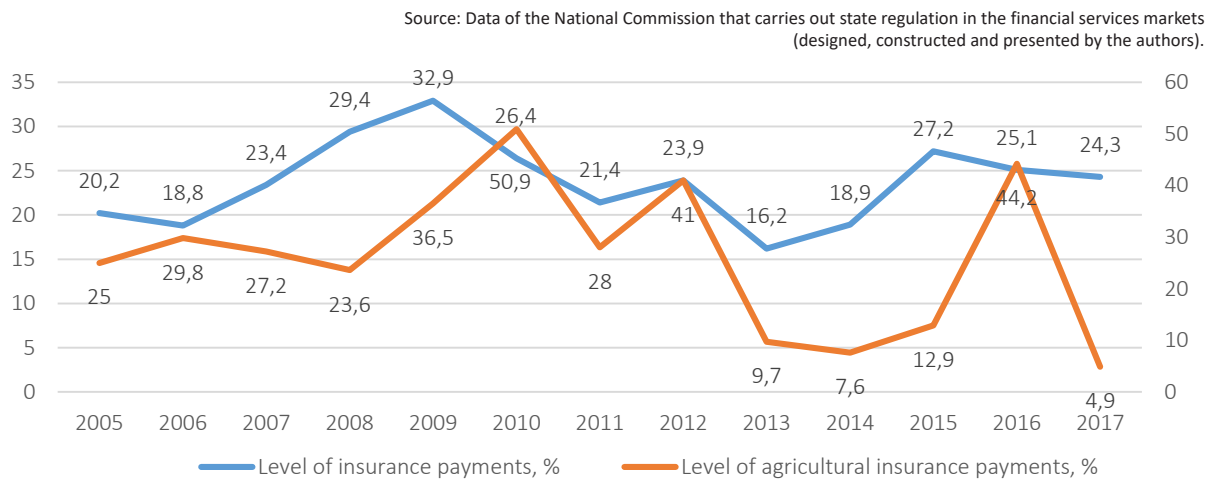
The sum of collected insurance premiums in the national currency in 2017 increased by 30% to UAH 204.4 million, which is the highest indicator since 2005. Also, the size of insurance premiums in terms of the insurance contract was significantly reduced: if in 2005 this indicator amounted to UAH 14.1 per contract, then in 2017 – UAH 213.5 per contract. That is, the growth rate was 15 times in 2017 compared to 2005, and during the analyzed period of 2005–2017, there was a tendency towards its annual growth, except for 2007 and 2014.

As a rule, agricultural producers pay a special attention to the indicator of the amount of insurance indemnity, reflecting the seriousness of

insurers' intentions to fully fulfill their obligations. In that regard, it should be noted that after the end of the year 2017, insurers looked decent – the amount of insurance indemnity amounted to UAH 7.6 million, of which 92% (UAH 7 million) accounted for the winter period and only 8% (UAH 0.6 million) – in the spring-summer period.

At the same time, analyzing the indicator of the amount of insurance indemnities in the calculation of the insurance contract, here should be noted the decrease in the value of this indicator by 8 times in 2017, compared with the previous year. However, the analysis of this indicator for the period of 2005–2015 makes it possible to confirm that its volatility and fluctuations are both decreasing and increasing. Only in 2016 the indicator reached its highest value – UAH 88.3 per insurance contract.

The next indicator characterizing the development of the insurance market is the level of insurance payments (Figure 5). The indicator of the insurance payments level under the insurance contracts concluded for the time period of 2005–2017 showed significant volatility (approaching to the level of 30%), having reached the maximum value in 2009 – 32.9% and the



Note: * The level of payments – the ratio of insurance payments to insurance premiums, %.

Figure 5. The level of payments*
(in terms of the insurance and agricultural insurance markets of Ukraine), %

minimum in 2013 – 16.2%. It should be emphasized that the level of agricultural insurance payments during the investigated period did not have a clear-cut tendency and reached an average of 23%.

The obtained results testify that the Ukrainian insurance market in general and the market of agricultural insurance services in particular are in the stage of formation. In addition, one of the reasons for this situation is the numerous refusal of insurance companies to pay insurance indem-

nity for formal reasons. Considering developed world agricultural insurance markets, it should be noted that this indicator is on average 75-80%.

It is rather risky to be engaged in farming. At the same time, domestic farmers are mainly insured only when they are required to obtain a credit or receive money from institutions in other way. At the present stage, this possibility is provided by a program of state forward grain purchase. As can be seen from the data in Figure 6, state financing programs of agricultural producers in the

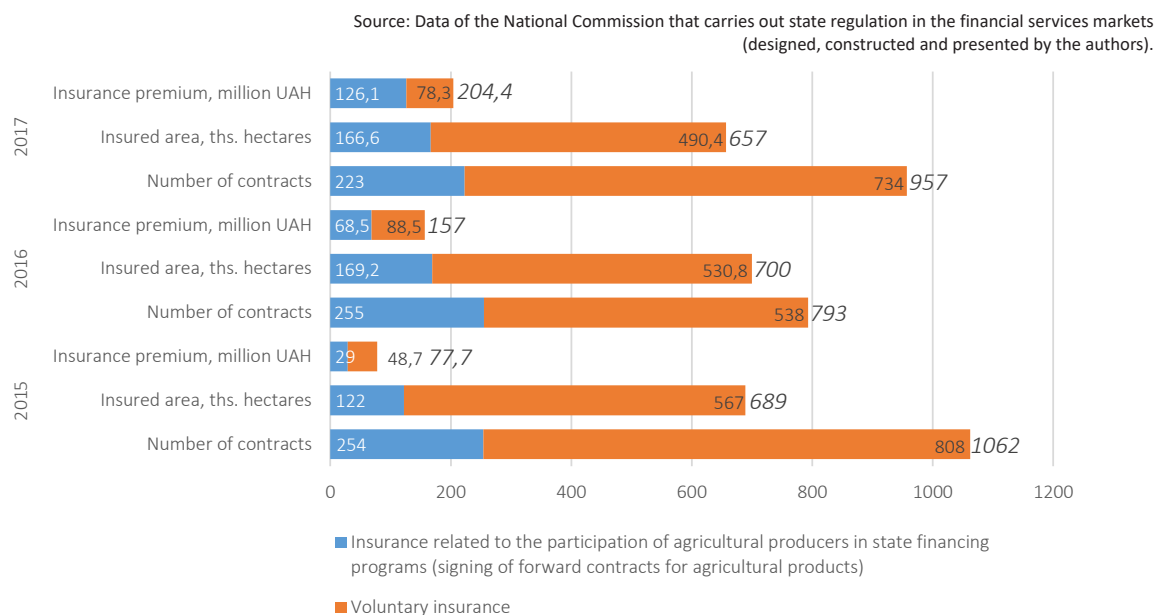


Figure 6. Indicators of the Ukrainian market of agricultural insurance in the context of voluntary insurance contracts and insurance related to participation in farm financing programs (2015–2017)

context of the Agrarian Fund of Ukraine (AFU) and the State Food and Grain Corporation of Ukraine (SFGCU) hold a significant share of the agricultural insurance portfolio. Thus, their share in the total number of concluded contracts and the insured area reaches almost a fourth part, in the insurance amount – half (except for 2015).

Obligatory insurance in the case of contracts for forward purchases, of course, strengthens the position of the agricultural insurance market to a certain extent. At the same time, it takes place more formally, especially taking into account the insurance parameters under such contracts, which markedly differ from others, and sidelines the real insurance protection. As a result, such a formality acts as a chilling effect both for insurers and for policyholders regarding the use of insurance protection as an effective risk management tool in the agrarian sector of the economy.

So, in the year 2017, 8 of 13 insurance companies represented in the agricultural insurance market are cooperating with the Agrarian Fund of Ukraine (in particular: USIC ASKA (Insurance Company), SIC Ingo Ukraine (Insurance Company), IC PZU Ukraine (Insurance Company), 'Ukrainian Fire and Insurance Company', IC Universalna (Insurance Company), IG TAS (Insurance Group), IC

Krayina (Insurance Company), IC Ukrfinpolis (Insurance Company).

At the present point in time, insurance protection in the agrarian business of Ukraine is formed by two segments: the first one is insurance of agricultural crops (with field crops-dominated) and the second is the insurance of agricultural animals (which is actually formal and used for other purposes) (Figure 7). It should be noted that the farm animal insurance system is actually a formal instrument used to achieve other non-insurance-related goals.

Data on insurance payments in the context of voluntary insurance contracts and insurance associated with participation in farm financing programs for 2015–2017 are shown in Figure 8.

From the analyzed Figure 8, it is showed that the share of voluntary insurance is dominant in payments on the agricultural insurance market and reaches over 80% on average over the researched period. And only about 1/5 of the insurance payments are covered by insurance contracts associated with participation in farm financing programs.

Characteristic features of the current state of the agricultural insurance market are summarized and reflected in Figure 9.

Source: Data of the National Commission that carries out state regulation in the financial services markets (designed, constructed and presented by the authors).

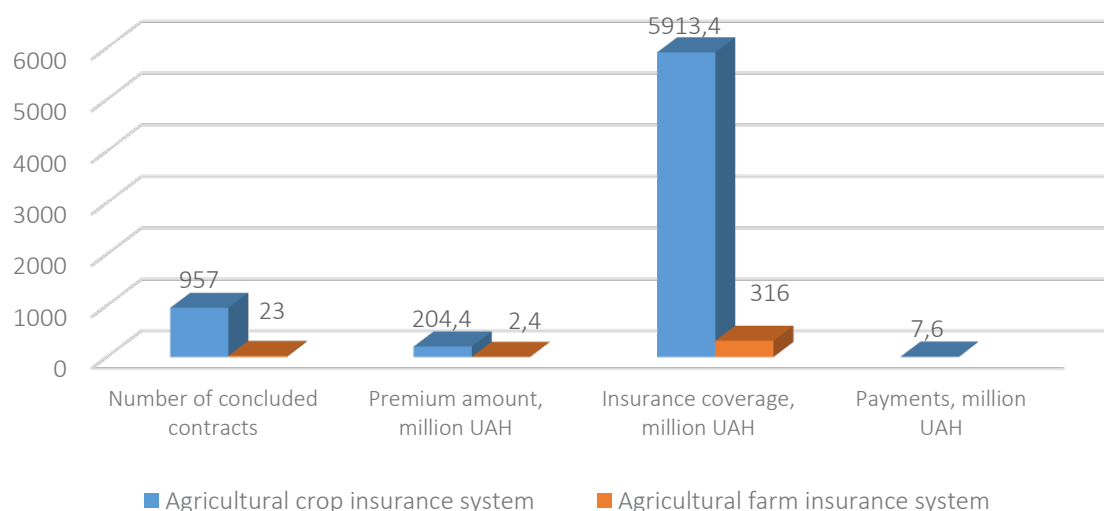


Figure 7. Indicators of the Ukrainian agricultural insurance market in terms of the components of insurance systems (2017)

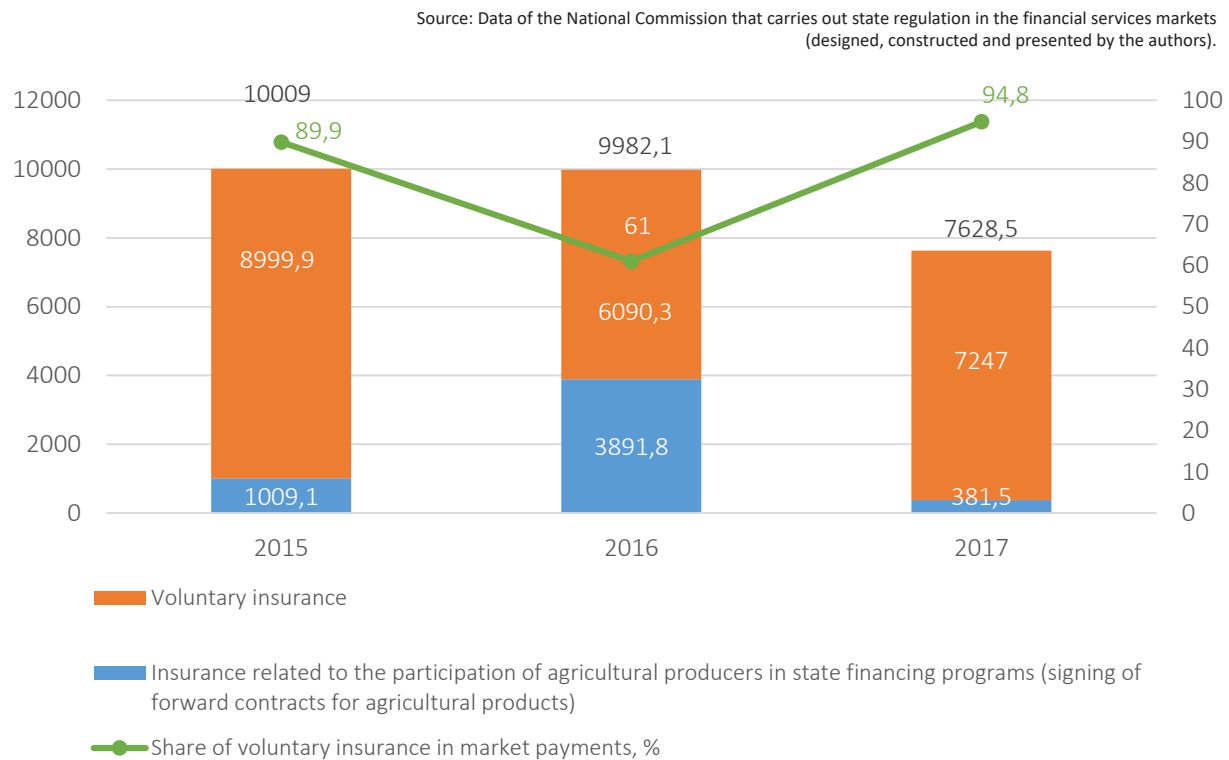


Figure 8. Dynamics of insurance payments (ths. UAH) in the context of voluntary insurance contracts and insurance associated with participation in agricultural financing programs in 2015–2017

Source: Author's generalization.

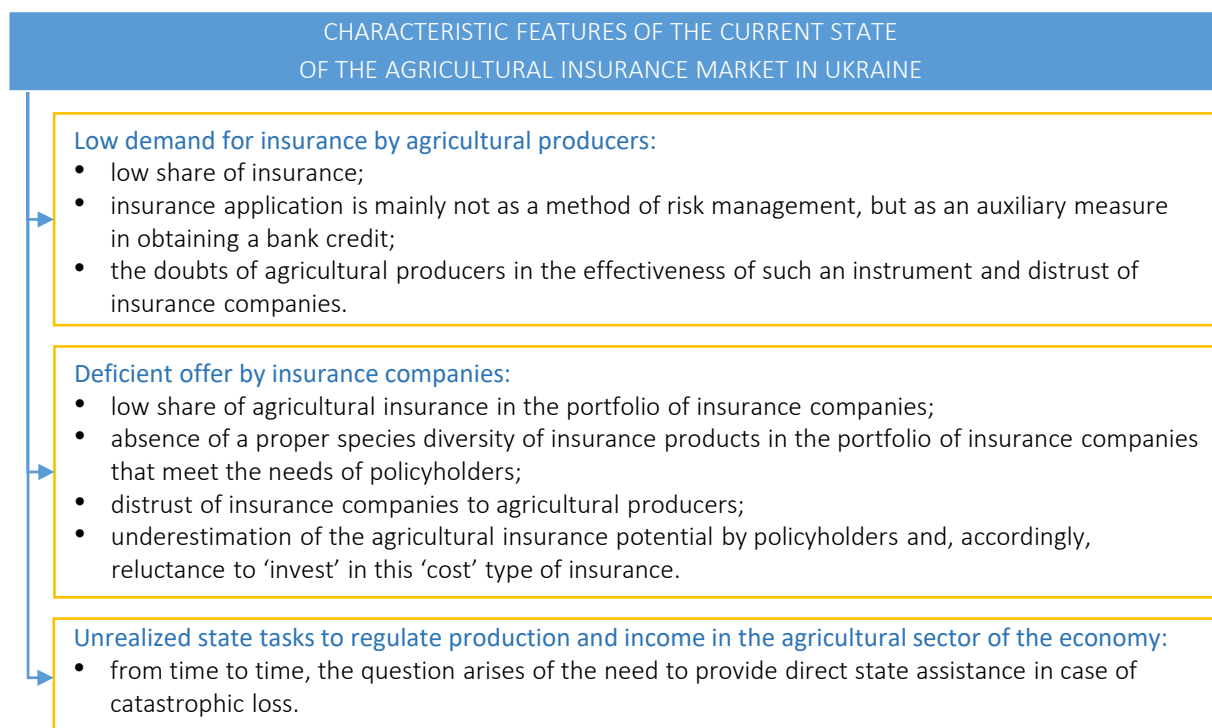


Figure 9. A set of characteristic features of the current state of the agricultural insurance market in Ukraine

Source: Data of the National Commission that carries out state regulation in the financial services markets (designed, constructed and presented by the authors).

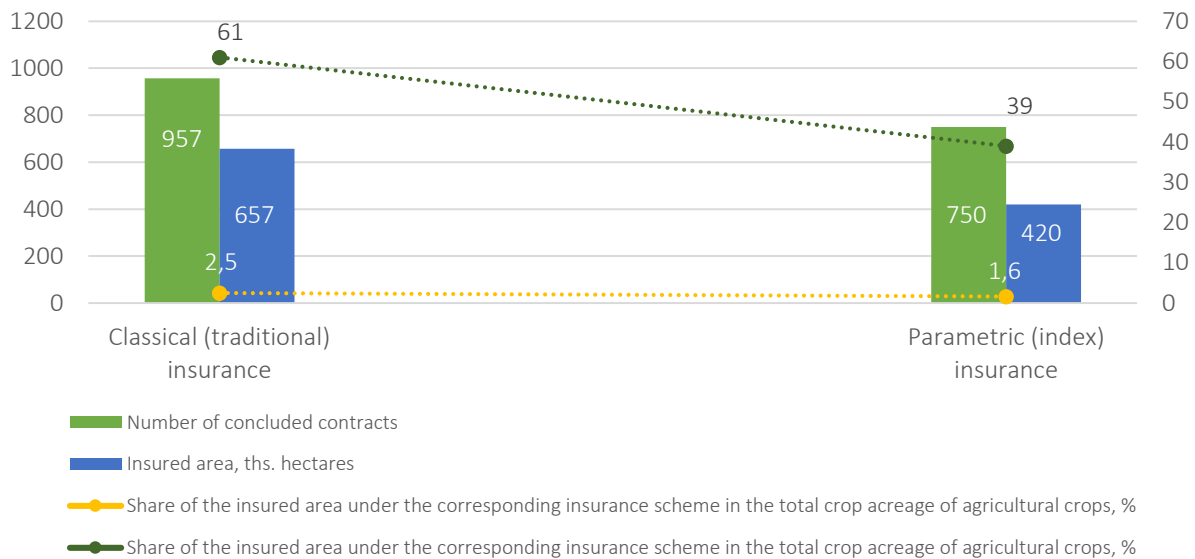


Figure 10. Ukrainian agricultural insurance market in terms of classical and parametric insurance schemes (2017)

3.3. Classification characteristics of insurance products in agrarian business of Ukraine

Currently, a number of agricultural insurance schemes have been formed and are functioning in the world, based on different approaches. They differ in the level of risk coverage, applied specification, as well as the degree of state participation in insurance systems. Key among them should be the following: insurance of crop, cultures, animals, income, etc. For each of these systems, a combination of insurance products with an extensive marketing line of the latter is provided and offered.

In Ukraine, the current market of agricultural insurance is presented in terms of the classical and parametric schemes of insurance (Figure 10).

Analyzing the data of Figure 10, it should be noted that the share of the insured area in the total crop acreage of crops at the end of 2017 according to the classical insurance scheme was 2.5%, while to the parametric – 1.6%.

The total number of insured crop acreages in Ukraine in 2017 amounted to 1,077 thousand hectares, of which 420 thousand hectares were insured by using the index insurance scheme (that is, this insurance scheme covered almost 40% of the

total area of insured crops in Ukraine). The number of concluded insurance contracts prevailed according to the classic insurance scheme as well. At the same time, given the innovative nature of this insurance scheme in Ukrainian insurance practice, its achievements in the domestic agricultural insurance market are quite significant (its implementation in the framework of pilot projects took place from 2016).

Today, the domestic agricultural insurance market uses a lot of classic insurance products, which have been developed according to international standards since 2009. It should be noted that the object of classical insurance products are individual risks – depending on their number, the insurance is classified as mono-risk (insurance from the named risks) and multi-risk (complex).

According to the classic scheme, agricultural risks were insured in the context of multi-risk and mono-risk product proposals with their branched marketing line (Figure 11).

Analyzing the data of Figure 11, it should be noted that among the classical insurance products in the Ukrainian agricultural insurance market multi-risk product offers have received wide advertisement that provide a full and blanket insurance protection of crops in general and field crops, in

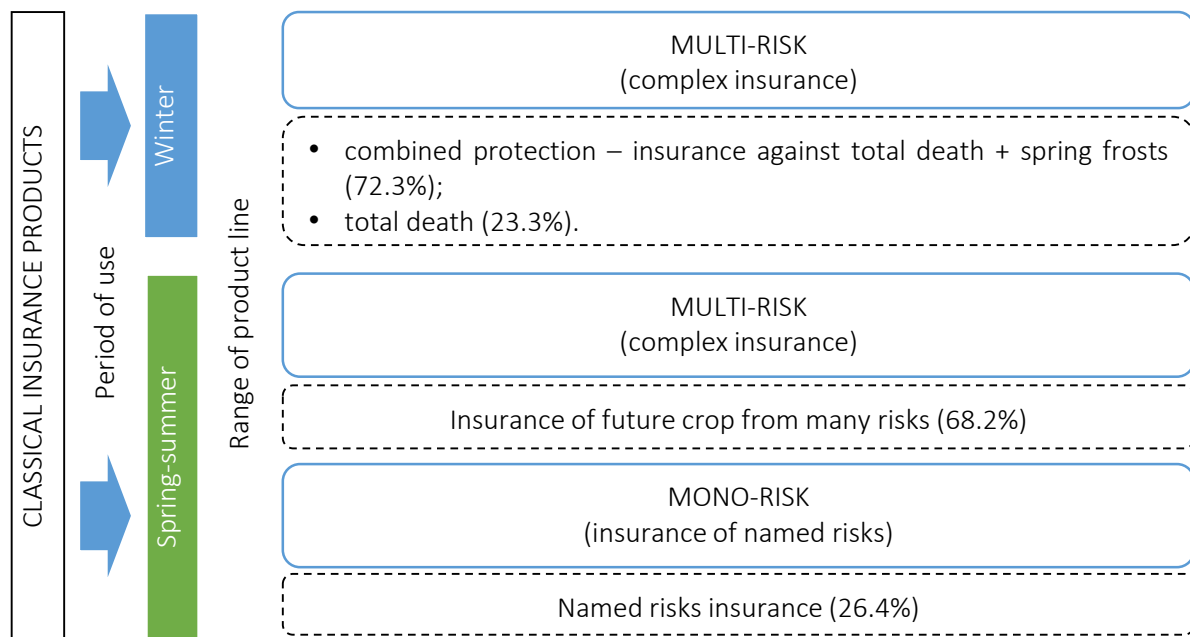


Figure 11. Set of the classical (traditional) insurance products used in agrarian enterprises of Ukraine in 2017 in the context of seasonal gradation

particular. Moreover, considering this aspect from the position of seasonal gradation, it is worth noting that multi-risk insurance products are popular both in winter and in spring-summer period.

A set of parametric (index) insurance products used in agrarian enterprises in Ukraine in 2017 is reflected in Figure 12.

Analyzing Figure 12, it should be noted that there are many types of index insurance products, while Ukrainian insurance practice at this stage is limited

by the main two of them: weather and yield. Weather index insurance products dominate among the latter.

In addition, it should be noted that their implementation is still limited in terms of territorial coverage (these products cover only a few regions of the country) and are currently distributed to a limited range of crops (wheat and maize). Thus, at present, parametric insurance at the Ukrainian agricultural insurance market operates within the pilot project, which makes a significant potential for its further development, due to its numerous advantages.

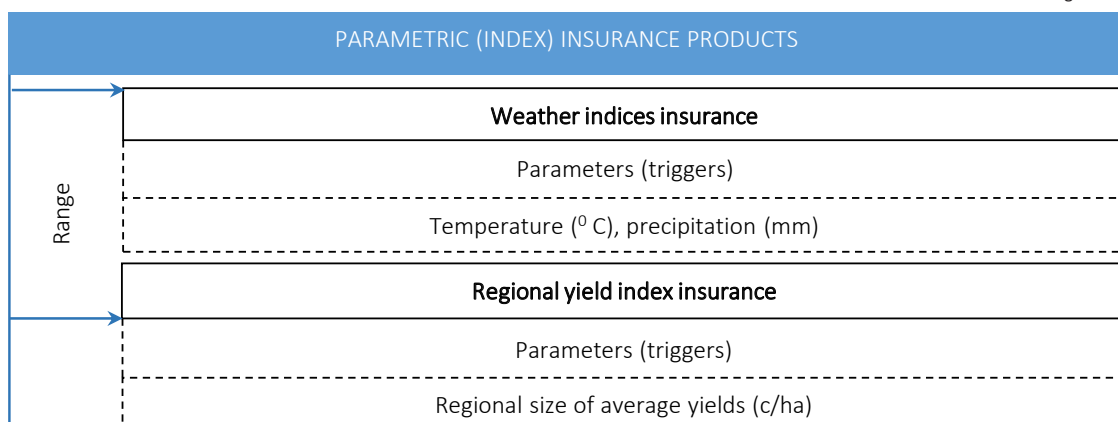


Figure 12. Set of parametric (index) insurance products used in agrarian enterprises of Ukraine in 2017

4. KEY PROBLEMS OF THE UKRAINIAN AGRICULTURAL INSURANCE MARKET BACKGROUND

Among the reasons for a mediocre development level of the Ukrainian agricultural insurance market, it is first of all worth highlighting the problem of trust of the insurance process participants to each other. In this context, it should be noted that in Ukraine, the sale of insurance services is carried out mainly in a direct way with no involvement of insurance intermediaries, that is, directly by insurance companies. World practice is somewhat different – in developed countries, the key role in the implementation of insurance services is given to insurance intermediaries. The insurance industry of Ukraine operates in such a way that only 5% of the insurance market is served by brokers, whereas in the US and Canada – up to 95%, in Italy – 92%, Germany – 87%. In Europe, for serving of one insurance company, ten brokers are needed, while in Ukraine, there is only one broker for twenty insurance companies.

It should be noted that in the domestic insurance market in recent years, there are about three hundred insurance companies, only less than a dozen (or about 4%) of which are engaged in the insurance activities in agriculture. And a significant proportion of insurers have a negative reputation, which eventually casts a shadow over the whole market. At the same time, the situation has changed somewhat with the completion of the Ukrainian insurance industry by foreign insurers. Over the past few years, the presence of foreign capital has significantly increased in the Ukrainian insurance market, which has significant potential for development, not fully realized yet.

Foreign investors, when entering the Ukrainian insurance market, note that Ukraine is of interest in their dynamic growth in the insurance sector, as well as the number of potential insurers. Along with this, they bring to the market what it lacks – experience, technology, principles of business process, and most importantly, what was most lacking in the Ukrainian insurance industry – the

culture of insurance business. Each foreign insurer tends to be a market leader, resulting in a severe competition, which is part of the overall strategy of many companies to strengthen their positions and expand their presence in Central and Eastern Europe.

Also, among the reasons for insufficient development of the agricultural insurance market, one can distinguish its perception as a separate (individual) instrument. It results in the fact that in recent years in Ukraine, crops are insured on an area not exceeding 0.7 million hectares or only 2.6% of the available crop acreage. The maximum value – 2.4 million hectares or 9.7% – this figure has already reached in far 2007, and since 2009 does not exceed 3%, having in recent years a tendency towards decreasing. Such a decrease of the analyzed indicator is quite logical, since by 2009 there was a program of state support under the condition of compulsory agricultural insurance.

World practice confirms that in countries where the agrarian sector has a powerful development, there is a high level of agricultural insurance. Analyzing Figure 13, it should be noted that in countries such as France (35%), China (36%), Spain (65%), Canada (70%), and the United States (82%), the share of insured areas from all sown ones, respectively, is fairly high. In 2017 in Ukraine, this indicator is approaching the level of 3% (Figure 13).

The next reason for the poor level of agricultural insurance distribution in Ukraine is the lack of a proper culture of agrarian business – farmers do not consider agricultural insurance as its integral part.

In addition, it should be taken into account that different groups of farmers have significantly different need for insurance protection (Figure 14).

Agroholdings, in general, work with land in different regions of the country. And if in one area there were unfavorable circumstances that caused a shortfall of crops, then on the back of more favorable conditions in another area in which the land of such an agricultural holding is available, compensation for lost income and income equalization will be provided.

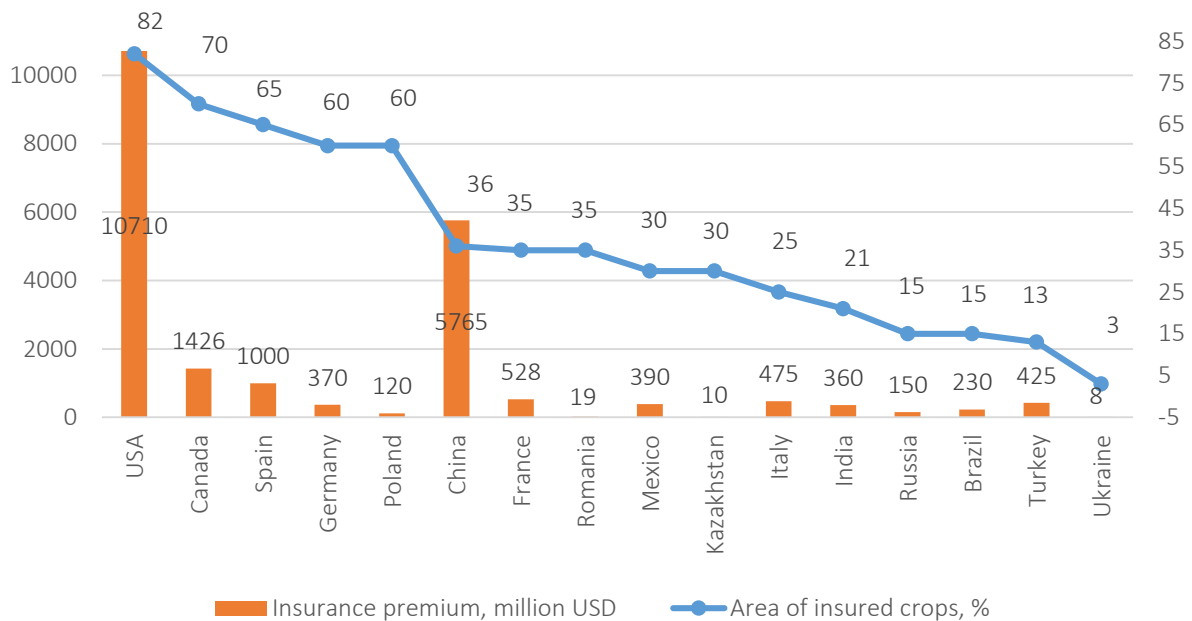


Figure 13. The world insurance market of agricultural crops in the context of the main indicators in 2017

Source: Author's generalization.

VARIATION OF INSURANCE PROTECTION NEEDS OF AGRICULTURAL ENTERPRISES, DIFFERENT BY SIZE	
Small and medium-sized agricultural enterprises	Localization of farm fields in one or more neighboring regions with the same natural and climatic conditions
	In case of natural calamities, destruction or damage of the crop occurs in all fields of the economy
	Lack of necessary financial resources
	The choice of insurance protection in the framework of a limited range of insurance products due to insufficient financial resources
Agroholdings	Fields' dispersion in a regional context
	In case of natural calamities, destruction or damage of the crop in one of the regions, the crop in another region diversifies the losses incurred and finally leads to a profit
	Sufficient financial resources during the year
	The possibility of choosing the necessary insurance protection, by choosing among the range of the required insurance products

Figure 14. Features of insurance protection for different by size of agricultural producers

Source: Author's generalization.

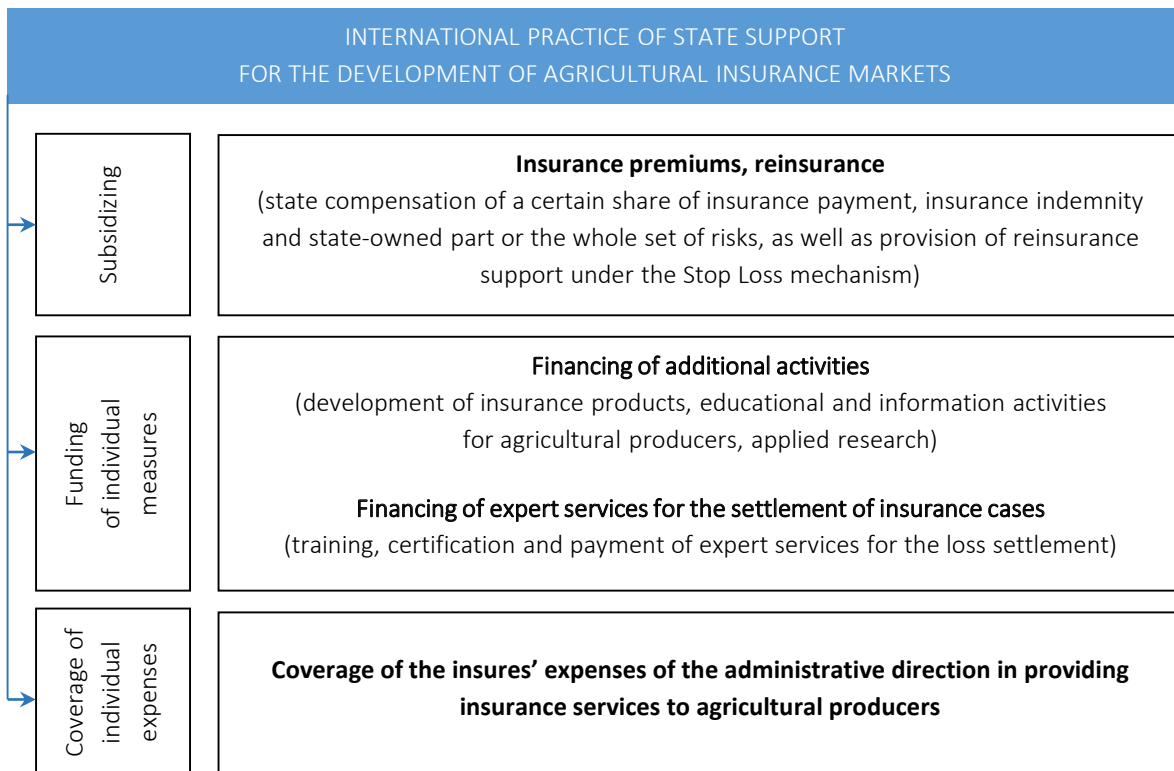


Figure 15. International practice of state support for the development of the insurance market in the agrarian sector of the economy

Instead, in the vast majority of agricultural enterprises, all land is concentrated in one region. And if agricultural crops in this region were affected by unfavorable weather conditions, then their owner loses a significant part of the crop and, accordingly, a significant part of the income.

Another important constraint on the development of agricultural insurance in Ukraine is the obscurity of mechanism for the functioning of this market tool of risk management. In practice, the situation is often widespread in which farmers do not understand how the agricultural insurance system works in agriculture. It should be noted that farming is rather risky activity. At the same time, farmers are mostly insured only when they are required to obtain a credit or receive money from institutions in another way.

The solution of this problem, first of all, can be the use of such an instrument as a 'client-oriented approach' – the establishment of an active and long-term dialogue between the participants in the insurance process with maximum consideration of the needs and interests of a particular individual

client. In order to achieve a positive result in dialogue with them, one should be guided by an individual approach.

Such a client-oriented approach is used by countries with developed agricultural insurance. Thus, insurance in agriculture is an important market tool of risk management.

5. LONG-TERM DEVELOPMENT VECTORS OF THE AGRICULTURAL INSURANCE MARKET IN UKRAINE

The analysis of international agricultural insurance practice shows that this insurance segment develops rather quickly and works efficiently only under condition of long-term and scaling state support. It should be noted that in countries where the government does not pay due attention to agricultural insurance, its development is slow and unsystematic.

As a rule, that states are interested in the resumption of proceedings of agricultural products to provide insurance protection for agricultural producers and stabilize their income over time period, support agricultural insurance. In subsidizing practice, different types of subsidies financing (programs) are used. They are aimed at supporting agricultural insurance, the key of which are grouped in Figure 15.

The prevalent world practice of stimulating the development of agricultural insurance is the application of subsidy programs, in particular insurance premiums, reinsurance. The most widespread among the latter is the subsidy payment to cover part of the insurance premium to insurers, as opposed to Ukrainian practice, which provided for the full payment of insurance premiums to the insurer and the subsequent possibility of obtaining compensation from the state budget.

The application of such a practice avoids problems with diversion of current capital from agricultural producers, which should otherwise initially pay the insurance premium in full, and then wait for the compensation of its part from the state in the form of a subsidy.

Alternative types of the formation of the insurance protection system in the agrarian sector of the economy can be:

- system state regulation, which provides for the full provision of all the functions of insurance protection in the agrarian sector of the economy.

This option is associated with significant public expenditures aimed at providing insurance protection in the agrarian sector of the economy, as well as the formation of unequal opportunities for obtaining state aid depending on the region and the creation of a noncompetitive environment in the financial services market.

- formation of an effective private-public partnership, which embodies the effective use of state resources and maximum use of the agrarian and insurance market opportunities.

Such a symbiosis allows the state to minimize the costs of supporting the development of agricultur-

al insurance and focus on the performing of purely managerial functions, supporting through the mechanism of subsidizing agricultural insurance premiums the production of priority agricultural products. Involving the private sector in the performing of the state support program provides competition in the segment of agricultural insurance, increases the responsibility of insurers and strengthens control over their activities. At the same time, the state ensures the formation of a legislative base for the development of the agricultural insurance system, regulates the activities of insurance companies and ensures the most effective use of agricultural insurance as an instrument for the implementation of agrarian policy.

- passive state policy, which provides for the formation of insurance protection system in the agrarian sector of economy on the principles of market self-regulation without the state participation. According to this option, the state retains the functions of administrative intervention in the absence of economic control levers.

Thus, the foreign experience of agricultural insurance contains several models of interaction between the participants of this market, which are formed depending on objective conditions and existing economic traditions. At the same time, more and more countries in the world tend to adapt the experience of those countries, where, in contrast to direct state support, a system agricultural insurance model with state support was introduced to agricultural producers.

Currently, Ukraine is still in the process of finding the optimal model of agricultural insurance in view of the development state of this segment of the insurance market and the state budget capacity. Further development of an effective agricultural insurance market in Ukraine should be carried out within the framework of a private-public partnership with a well-defined system approach to its construction, which is proved by positive international experience. At the same time, an important aspect is the use of benefits from previous years, in particular in the part of agricultural insurance tools, which at this stage is a very bit as good as international practices and takes into account previous mistakes in realizing the further formation policy of the insurance protection system in Ukraine.

Examples of the successful functioning of the insurance market in the agrarian sector of economy, based on the cooperation of the state and the private insurance sector, are the insurance systems of such countries as the USA, Canada, Spain, Turkey and some others, where there is a symbiosis between the state and private insurance companies in the agricultural insurance market.

When choosing an optimal model to implement agricultural insurance in the framework of form-

ing an effective private-public partnership in Ukraine, it is necessary to stimulate the creation of an association of insurers – insurance pools. A key feature of this model is that insurance for agricultural products should remain voluntary, and system risk coverage will be provided by private insurance companies on the basis of joint and several obligations (co-insurance). This model has been operating for a long time in Spain and Turkey, with more than two thirds of insured farmers in Spain, almost 90% of crops and 70% of animal inventory.

CONCLUSION

The article analyzes the current trends in the functioning of the Ukrainian agricultural insurance market, summarizes the reasons that impede its effective development, and, on this basis, the directions and prospects for further development of this segment of the insurance market are substantiated:

1. The features of the structural formation and functional characteristics of the market of agricultural insurance services in Ukraine are determined. In particular, it is determined that at the given time interval, insurance protection in the agrarian business of Ukraine is formed by two segments: the first one – insurance of agricultural crops (with field crops dominant) and the second – insurance of agricultural animals (which is actually formal and used for other purposes). It should be emphasized that the farm animal insurance system is in fact a formal tool used to achieve other non-insurance-related goals. In other words, in practice, the Ukrainian agricultural insurance market is mono-complex – represented only by insurance system of agricultural crops and perennial plantings.

Regarding the functional characteristics of this segment of the insurance market, it should be noted that it is characterized by conditionally voluntary nature – in fact, voluntary insurance reaches no more than 70%, whereas a third of the market forms a formal compulsory insurance in the context of state financing programs for agricultural producers in the context of the Agrarian Fund of Ukraine (AFU) and the State Food and Grain Corporation of Ukraine (SFGCU).

2. The discrepancy between the development dynamics of the agrarian sector of economy and the volume of agricultural insurance in Ukraine was revealed. Today, the agricultural sector remains one of the most promising and active sectors of the Ukrainian economy's development, providing the state both with leading positions in the world global food market, guaranteeing world global food security and profit and domestic economic growth. At the same time, all this requires a stable financial support. World practice shows that funds directed at the development of agricultural production should be supported by agricultural insurance, which guarantees the possibility of their return to creditors in case of an insured event.
3. The complex of reasons hindering the development of the agricultural insurance market in Ukraine is summarized and the peculiar features specific to this stage of development of the agrarian sector are systematized. According to the results of the research, the key ones include: lack of trust among the participants in the insurance process to one another; perception of agricultural insurance as a separate and, at the same time, an individual instrument; lack of necessary culture of agribusiness; mechanism incomprehensibility of functioning of this market tool of risk management.

4. According to the results of the research, it was revealed that at this stage the agricultural insurance market uses a sufficient set of insurance products that, according to their qualitative characteristics, comply with the international standards. The general tendency towards expansion of the spectrum and quality of insurance services for agricultural producers in the context of both abovementioned insurance schemes is noted. It was determined that according to the classical scheme, agricultural risks were insured in the context of multi-risk and mono-risk product proposals, and in parametric terms – in the context of weather and yield index insurance products.

The prospects of both insurance schemes in Ukrainian insurance practice are associated with the further expansion of the product line range within each of them, which is primarily oriented to the needs of agricultural producers.

5. The further construction of an efficient and effective agricultural insurance market in Ukraine should take place within the framework of a private-public partnership, which embodies the effective use of state resources and maximizes the use of the opportunities of the agrarian and insurance markets. The formation of an effective model of public-private partnership in the field of agricultural insurance should be carried out by encouraging the creation of insurers' associations and ensuring the subsidization of the cost part of insurance premiums by means of state support funds for the agrarian sector.

REFERENCES

1. Barnett, B. J., & Mahul, O. (2007). Weather index insurance for agriculture and rural areas in lower-income countries. *American Journal of Agricultural Economics*, 89(5), 1241-1247. Retrieved from https://www.jstor.org/stable/30139468?seq=1#page_scan_tab_contents
2. Barnett, B. J., Barrett, C. B., & Skees, J. R. (2008). Poverty traps and index-based risk transfer products. *World Development*, 36(10), 1766-1785. <https://dx.doi.org/10.1016/j.worlddev.2007.10.016>
3. Chantarat, S., Barrett, Ch. B., Mude, A., & Turvey, C. (2007). Using Weather Index Insurance to Improve Drought Response for Famine Prevention. *American Journal of Agricultural Economics*, 89(5), 1262-1268. <http://dx.doi.org/10.1111/j.1467-8276.2007.01094.x>
4. Dalhaus, T., Musshoff, O., & Finger, R. (2018). Phenology Information Contributes to Reduce Temporal Basis Risk in Agricultural Weather Index Insurance. *Scientific Reports*, 8(1), 1-10. <http://dx.doi.org/10.1038/s41598-017-18656-5>
5. Dandekar, V. M. (1977). *Crop insurance for developing countries* (Teaching and Research Forum Paper No. 10). New York: Agricultural Development Council.
6. Halcrow, H. G. (1948). *The theory of crop insurance* (Unpublished doctoral dissertation, University of Chicago). Chicago: Department of Economics.
7. Herasymenko, N. A., & Zhemoida, O. V. (2009). Ризики в сільському господарстві з урахуванням регіонального аспекту [Ryzyky v silskomu hospodarstvi z urakhuvanniam rehionalnoho aspektu]. *Ekonomika APK*, 9, 62-65.
8. Hudz, H. O. (2015). Сучасний стан розвитку страхових послуг в аграрному підприємстві України [Suchasnyi stan rozvytku strakhovykh posluh v ahrarynomu pidpriemnytstvi Ukrainy]. *Visnyk Odeskoho natsionalnoho universytetu. Seriya: Ekonomika*, 20(3), 218-224. Retrieved from http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&2_S21P03=FILA=&2_S21STR=Vonuecon_2015_20_3_51
9. Kenderdine, T. (2018). Insurance Plus Futures: Agricultural Commodity Price Reform in China. *Asia and the Pacific Policy Studies*, 5(2), 331-346. <https://doi.org/10.1002/app5.226>
10. Koschyk, H., & Wilson, T. (2013). Principles for dealing with financial sustainability risks. *Journal of risk management in financial institutions*, 2, 129-136.
11. Mahul, O. (2001). Optimal insurance against climatic experience. *American Journal of Agricultural Economics*, 83(3), 593-604. Retrieved from https://www.jstor.org/stable/1245089?seq=1#page_scan_tab_contents
12. Mahul, O., & Stutley, Ch. J. (2010). *Government Support to Agricultural Insurance: Challenges and Options for Developing Countries* (250 p.). The World Bank, Washington. <https://doi.org/10.1596/978-0-8213-8217-2>
13. Martseniuk-Rozaronova, O. V. (2010). Державна підтримка при страхуванні сільського-сподарських товаровиробників

- [Derzhavna pidtrymka pry strakhuvanni silskohospodarskykh tovarovyrobnykh]. *Ekonomika APK*, 10, 91-95.
14. Matsuda, A., & Kurosaki, T. (2019). Demand for temperature and rainfall index insurance in India. *Agricultural Economics*, 50(3), 335-366. <https://doi.org/10.1111/agec.12489>
 15. Navrotskyi, S. A. (2012). Стан та тенденції розвитку сільськогосподарського страхування [Stan ta tendentsii rozvytku silskohospodarskoho strakhuvannia]. *Nauka y ekonomika*, 1(25), 61-68.
 16. Nesterchuk, Y., Prokopchuk, O., Tsybalyuk, Y., Rolinskyi, O., & Bilan, Y. (2018). Current status and prospects of development of the system of agrarian insurance in Ukraine. *Investment Management and Financial Innovations*, 15(3), 56-70. [http://dx.doi.org/10.21511/imfi.15\(3\).2018.05](http://dx.doi.org/10.21511/imfi.15(3).2018.05)
 17. Odening, M., & Shen, Z. (2014). Challenges of insuring weather risk in agriculture. *Agricultural Finance Review*, 74(2). <http://dx.doi.org/10.1108/AFR-11-2013-0039>
 18. Pikus, R., Prykaziuk, N., & Balytska, M. (2018). Financial sustainability management of the insurance company: case of Ukraine. *Investment Management and Financial Innovations*, 15(4), 219-228. [https://doi.org/10.21511/imfi.15\(4\).2018.18](https://doi.org/10.21511/imfi.15(4).2018.18)
 19. Polchanov, A. Iu. (2013). Агрострахування як складова продовольчої безпеки держави [Ahrostrakhuvannia yak skladova prodovolchoi bezpeky derzhavy]. *Visnyk Kyivskoho natsionalnoho torhovelno-ekonomichnoho universytetu*, 4, 48-57. Retrieved from http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&S21P03=FILE&S21STR=Vknuteu_2013_4_6
 20. Porrini, D., & De Masi, F. (2019). The role of insurance in the management of disaster risk: the case of the Italian cathedrals. *Insurance Markets and Companies*, 10(1), 9-25. [http://dx.doi.org/10.21511/ins.10\(1\).2019.02](http://dx.doi.org/10.21511/ins.10(1).2019.02)
 21. Potiiko, S. V. (2017). Розвиток аграрного страхування в умовах євроінтеграції [Rozvytok ahrarynoho strakhuvannia v umovakh yevrointehratsii]. *Oblik i finansy*, 77, 107-111. Retrieved from <https://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=23079878&AN=128534035&h=SrmUn8FFI52Ah6ecd5s%2fG8y0PZzUhcMPUu2d1X8ghiNtujA%2ftxnOYqcAqk0mo24OWPnRhoVWQqSPpitgFz%2b8Q%3d%3d&url=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d23079878%26AN%3d128534035>
 22. Prokopchuk, O., Prokopchuk, I., & Mentel, G. (2018). Index Insurance as an Innovative Tool for Managing Weather Risks in the Agrarian Sector of Economics. *Journal of Competitiveness*, 10(3), 119-131. <https://doi.org/10.7441/joc.2018.03.08>
 23. Rehman, A., & Jian, W. (2014). Analysis on the Wheat Growers Insurance Purchasing Decisions in Hebei Province China. *Advanced Materials Research*, 962-965, 2995-3002. <https://doi.org/10.4028/www.scientific.net/AMR.962-965.2995>
 24. Santeramo, F. G. (2018). Imperfect information and participation in insurance markets: evidence from Italy. *Agricultural Finance Review*, 78(2), 193-194. <https://doi.org/10.1108/AFR-06-2017-0053>
 25. Sarris, A. (2013). Weather index insurance for agricultural development: Introduction and overview. *Agricultural Economics*, 44(4-5), 381-384. <http://dx.doi.org/10.1111/agec.12022>
 26. Sholoiko, A. S. (2009). Класичні та індексні страхові продукти для галузі рослинництва [Klasychni ta indeksni strakhovi produkty dlia haluzi roslynnytstva]. *Oblik i finansy APK*, 3, 161-165. Retrieved from <http://magazine.faaf.org.ua/klasichni-ta-indeksni-strahovi-produkti-dlya-galuzi-roslynnytstva.html>
 27. Sholoiko, A. S. (2014). Страховий ринок України: підходи до його класифікації та періодизації [Strakhovyi rynek Ukrainy: pidkhody do yoho klasyfikatsii ta periodyzatsii]. *Naukovyi visnyk Natsionalnoho universytetu bioresursiv i pryrodokorystuvannia Ukrainy. Seriya: Ekonomika, ahraryni menedzhment, biznes*, 200(3), 94-102. Retrieved from [http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&S21P03=FILE&S21STR=vnvau_econ_2014_200\(3\)_16](http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&S21P03=FILE&S21STR=vnvau_econ_2014_200(3)_16)
 28. Turvey, C. G. (2001). Weather derivatives for specific event risks in agriculture. *Review of Agricultural Economics*, 23(2), 333-351. Retrieved from https://www.jstor.org/stable/1349952?seq=1#page_scan_tab_contents
 29. Vilenchuk, O. M. (2014). Стан та перспективи розвитку аграрного страхування в Україні [Stan ta perspektivy rozvytku ahrarynoho strakhuvannia v Ukraini]. *Oblik i finansy*, 2, 91-96.
 30. Wang, Y. L. (2012). Fishery Logistics Insurance Management Schemes. *Advanced Engineering Forum*, 6-7, 773-777. <https://doi.org/10.4028/www.scientific.net/AEF.6-7.773>
 31. Ziemele, J., & Voronova, I. (2013). Financial stability of the EU's insurance companies. *Economics and management*, 18(3), 436-448. <http://dx.doi.org/10.5755/j01.em.18.3.4780>