



Agriculture Insurance

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Abstract: . In the context of the continuous development of the world economy and the global financial system, the importance of the insurance system and its main component, the insurance market, is increasing. First, in world practice, the insurance system is one of the largest sources of investment in the economy through the formation of certain funds and the redistribution of funds of economic entities. Secondly, insurance is one of the main forms of risk management, which is complex and has a growing tendency in the modern economy. In addition, ensuring the protection of the insured's property interests creates a continuous process of reproduction, which helps to ensure economic and financial stability.

Keywords: insurance, risk, agriculture, cost, damage, infectious diseases, marginal advantage, manage risk, subsidizing agriculture, small farms, limited credit supply.

Introduction.

One of the most important issues is to reduce and prevent the expected risks in agriculture. In fact, risks can be divided into different groups depending on the variety, complexity and scale and impact on production. However, it is more difficult to provide alternative solutions for farms in managing or reducing natural and non-human-caused risks.

Today, the risks observed in the agricultural sector can be divided into several categories, and measures can be taken to reduce the expected losses from these risks. In most cases, the damage observed in agriculture naturally depends on the volume of precipitation. That is, too little or too much annual rainfall is the main reason for damage to agricultural crops. According to the results of the research, the biggest losses of farmers' farms are due to erosion. Farmers suffering from natural climatic conditions, on the one hand, reduces the volume of food production, and on the other hand, creates a ground for disruption of the supply of raw materials for industrial enterprises.

In addition to precipitation, damage to farms from pests is also large. In most cases, when growing agricultural crops, pests cause serious damage during planting, harvesting and ripening periods. Depending on their category, pests cause partial or complete damage to crops. Also, the damage caused by pests can be different depending on the types of crops. Currently, biological or chemical methods are used to fight against pests. Although biological methods are not harmful to humans, they do not have a strong effect on pests, chemical methods are more effective, but they also have a great impact on human health. Excessive use of chemical pesticides can cause cancer and other infectious diseases in humans. For this reason, most of the developed countries impose strict restrictions on the use of chemical pesticides.

The possibility of complete elimination of damage to agricultural crops indicated above or to accurately calculate their damage is limited. Also, forecasting the number of damages is a complex process. That is, there is no human factor in the damages. Although the composition of irrigation water and soil fertility are also directly related to crop productivity, these factors provide a marginal advantage or result in lower benefits. It should not be forgotten that in these cases it is possible to improve land reclamation, or to reduce the damage due to additional mineral fertilizers. Also, the selection of crop types depending on the soil composition allows to partially reduce these shortcomings.

In our opinion, the damage seen in the cultivation of agricultural crops can be divided into several categories from the point of view of climate, biological factors, price changes, institutional, labor and health effects, as well as policy. Table 1. Of course, each risk category has its own characteristics, risk level and exposure period.

1 table.

Table 1: Risks in Agriculture

Natural climate risks	Description	Risk category	Periodicity	Ability to manage risk
Weather risks	Less/more precipitation, sudden cooling/warming of temperature	Real ^a , covariate ^b	From the lowest to the middle	Medium
Biological risks	Pest, disease, contamination, soil degradation	Real ^a , uniqueness	Medium	Medium
Price risks	Price changes due to shortages. Market volatility.	Kontseptual ^d , covariate ^b	Medium to high	Medium to high
Institutional risks	Mechanism of financial support of the state, interest rates, customs benefits	Moliyaviy ^e , covariate	Medium	Medium
Risk of harm to work and health	Illness, death, injury, availability of labor	Serious risk, characteristic	From the lowest to the middle	Medium to high
Political risk	Agricultural policy of the state, tax policy in the agrarian sector, subsidizing agriculture	Dynamic ^f , covariate	Low to medium	Medium to high

^a Insuring risks due to the high probability of damage but the inability to prevent it.

^b sudden changes in rainfall in a certain area and sudden changes in market prices.

^c risks that belong to each farmer, and this risk does not apply to other farmers.

^d Risks that occur for certain reasons, such as speculative risks, are not insurable.

^e the risk involved in situations where the chance a business's cash flows are not enough to pay creditors and fulfill other financial responsibilities

^f Risk that arises as a result of organizational change

In fact, one of the main risks for farmers and peasant farms is seasonal fluctuations in production prices. Almost all farmers are faced with this risk, a sharp increase in the price of resources during the production period, and a decrease in the price of products during the harvest is a big risk and risk for all producers. It is not so correct to consider this process only as a risk, but there is also a high probability that prices will rise sharply when the harvest is harvested, and farmers will get a high level of profit. Such cases have been observed a lot in agriculture, that is, the price of seeds, pesticides, and fertilizers for a certain type of product does not change during a certain period, but the price of the cultivated product increases sharply and the rate of return will also be high. These situations are not considered good for farmers or consumers, as they are a big risk for most small-scale farms. Because most of the manufacturers want to sell their products as soon as possible, so the price change is not beneficial for them. While consumer price changes are driven by the market balance of supply and demand, macro-level markets are highly influenced by large traders. Speculative risk management is more complex and depends more on the regulation and efficiency of agricultural markets.

The interest rate and volume of loans to the agricultural sector are of great importance for small farms. However, the fact that agricultural farms operate without the status of a legal entity limits their access to loans. Although the ongoing reforms of the government partially provide financial support to the microfinance system, informal financial providers are still the financial providers of farmers' farms. If we analyze the price formation of products, we can see the influence of informal financial providers on the market price. On the one hand, it fills small financial processes, but it is a big risk for producers and consumer markets.

According to research, risks for farmers and farms are divided into two aspects. First, the limited credit supply of formal financial institutions makes the availability of credit highly uncertain. Because all manufacturers have the same privilege to use it. Also, changes in the credit policy of these institutions affect the right of farmers to receive credit. Second, informal credit is often very expensive and has a high interest rate. Also, the terms of payment were developed to the detriment of farmers.

Most farms rely on family labor to ensure high profits, which on the one hand guarantees labor productivity and, on the other hand, reduces labor costs. Although the agricultural sector is a large sector, it is a sector that is quickly affected by political changes. The production cycle should be 1-2 times a year, it is necessary to fully determine what kind of products should be grown. Also, in most cases, the agricultural sector is directly related to the state subsidy system, for example, in order to prevent a sharp increase in prices in the livestock sector, the government introduced a large-scale subsidy system¹.

In our opinion, the existence of several risks in the cultivation of products in agriculture shows how important the sector is for the state, but the risk associated with natural climate change is the most relevant for the sector. In Table 1, all risks except climate risks are above average, but only changes in annual precipitation and temperature are seen as the most serious problems in reducing productivity.

In fact, if employment in agriculture is fully based on the laws of the market, the prices of consumer goods will increase sharply, and most producers (farmers and peasants) will be more likely to transfer their work from the agricultural sector to another sector. Because, due to low turnover and high risk in production, most entrepreneurs do not like to do business in the agar industry. Along with the way governments address agricultural challenges, strategies have largely shaped farmers' attitudes toward risk and risk management.

¹ Decree of the President of the Republic of Uzbekistan, No. PQ-5017 dated 03.03.2021
Decree of the President of the Republic of Uzbekistan, dated 14.06.2021 No. PQ-5146

Farmers and peasant farms used several methods to reduce risks. The risks present in this process are divided into 5 categories, and the reasons and limits of each category are partially specified in 2 tables.

Table 2: Traditional Risk-Coping Strategies²

Strategy	Risks Addressed	Limitations/Costs
Cultivating a mix of crops	Biologic hamda iqlim bilan bog'liq risklar	Smallholders cannot get good prices for their output
Staggering crop planting dates	Iqlim o'zgarishi bilan bog'liq risk	Abandoning the optimal result
Nonagricultural activities	Diversification of income	Losing focus on core activity
Follow peers	Overcoming knowledge and information gap	Herd mentality results in lost opportunities
Reciprocal arrangements within the community/mutual help	Protecting cash/income flows	Not effective when covariate risks strike
Alignment with value chain players	Credit and price risk	Risk of being exploited by powerful value chain participants

Traditional risk management strategies for farmers depend directly on government policies. For example, the observed changes in the customs or tax policy of the state can be a risk or an advantage for local producers. Although the customs concessions for meat imports are useful and effective for consumers, this concession is negative for farmers who consume the largest amount of meat. That is, the decrease in the market price does not stimulate the offer of production. Therefore, such behavior must be taken into account for the success of the state's policies to reduce risks in the agricultural sector.

Insurance is a risk transfer tool that offers compensation from pure risks. This is an ideal option for managing risks that are rare but have a large financial impact. Risks related to climate change in agriculture, biological, labor and health risks can be easily insured. Due to the fact that farmers and peasant farms do not have the opportunity to reduce and manage existing risks, it is possible to reduce the risk through full insurance. Reducing the level of risk in production, that is, insurance, on the one hand, encourages farmers to grow products without fear of risk, and on the other hand, it reduces the probability of them suffering losses. Therefore, insurance indirectly plays an important role in achieving incomes for farmers and food security for countries. Support of the agricultural sector through insurance is widely used throughout the world. Currently, state and private insurance companies support manufacturers by insuring the level of risk in the industry. Analyzing, among the developing countries, China and India are the fastest growing countries in the agricultural sector insurance system³.

Table 3

We can divide insurance into categories depending on the types of products produced in agriculture.

Cover	Description
Crop Insurance	
Multi-peril crop	Full risk includes comprehensive insurance, except in certain cases.

² Source: Authors.

³ Swiss Re. 2013. Partnering for Food Security in Emerging Markets. Sigma No 1/2013. Zurich, Switzerland.

insurance	
Named peril insurance	Covers only specified perils such as heavy rain, dew, etc.
Indeksga asoslangan sug'urta	A parametric overlay that offers payouts covering rainfall, field yield and more.
Livestock insurance	
Cattle insurance	An indemnity-based cover offering payouts in the event of death/disability of insured cattle.
Index-based insurance	Parametric imputation based on registration/mortality data for livestock identification.

Multi-peril crop insurance is a comprehensive insurance that offers full compensation in case of loss and is therefore offered to middle-income countries. But this requires farm-level underwriting and loss assessment, which costs farmers more to manage risk. The cost of this type of risk insurance is also relatively high because it covers a wide range of risks in agriculture. It is also an adverse selection based on high risk. Therefore, more countries are switching from multi-peril crop insurance to index-based insurance.

On the one hand, this makes farmers and peasant farms more responsible, but risk management is cheaper and more convenient. Also, this form is not so important for manufacturers. Because part of the responsibility for taking risks rests with farmers and peasant households. Index-based products are designed to overcome the limitations of peril and multi-peril crop insurance. Product design and minimal cost management system ensure almost complete elimination of risk. A limitation is that the performance of underlying risk can often result in payments that do not correspond to actual losses⁴, leading to dissonance for farmers. Index-based insurance is a relatively new entrant in the agricultural insurance market and is expected to address this issue better in the future with expanded coverage and improved experience.

Livestock insurance is a small but important part of the agricultural insurance basket. Traditional indemnity-based insurance has high administration costs and is not very effective in terms of risk reduction and is therefore not viable in most cases. Cattle insurance on a mutual model appears to be successful in some areas, but these schemes are very small and may take a long time to scale up. Efforts to develop index-linked cattle insurance in many foreign countries, including Mongolia, have had mixed results.

Governments are increasingly recognizing the benefits of implementing pre-financing for agricultural risk management. This has helped reduce the high level of risk and increase the demand for insurance. Public-Private Partnerships involving governments and private reinsurers have successfully implemented commercially viable agricultural insurance schemes and products such as index insurance using remote sensing technology for innovation and loss calculation in agricultural insurance products. contributed to the increase.

In most cases, subsidies have not significantly stimulated agricultural insurance. Because partial expenses of entrepreneurs are covered by the state, it reduced their high level of risk. Not only is the penetration of agricultural insurance services low, but the crops of a large part of the cultivated land are not insured. As a result, governments are forced to provide large amounts of aid to farmers after disasters, adding to the public costs of agricultural risks. This, on the one hand, suppresses the initiative of farms and peasants in the production of products, and on the other hand, increases the

⁴ In index insurance “basis” is defined as the difference between the pay out, as measured by the index, and the actual loss incurred by the insured. The risk associated with the variability and unpredictability of the “basis” is defined as the “basis risk”. Basis risk arises out of multiple factors, such as distance of farms from reference weather stations and failure of the product to capture farm-level behavior, such as the exact date of planting

state intervention in the field. Climate change is also driving up production costs. In our opinion, although governments are spending a lot of money to support agriculture, this is not a good environment for farmers to do business freely. A more holistic approach to agricultural risk reduction is needed.

The need to protect agriculture from ever-increasing risks has not been achieved despite reforms aimed at expanding farm insurance through financial and technical assistance in developing countries. Because most farms receive subsidies from the government, the application of full market laws in the agricultural sector is limited. In general, agricultural insurance remains limited to subsidy and credit-based initiatives, and farmers' voluntary demand for insurance services is not high. Because losses incurred in production can be taken from the state through subsidies or subsidies. This has been a problem with all insurance products in general, but it is more so for agricultural insurance due to the following additional problems.

Since different products are grown in agriculture, it is impossible to protect them with a certain category of insurance. Because of the length of the harvest period, it is impossible to fully reduce the loss with one type of insurance due to several unrelated risks at this time. Accordingly, it is appropriate to divide risk mitigation into different categories as shown in Table 3. During the period of sharp warming of the climate and sharp decrease in the winter season in Uzbekistan, the probability of obtaining the expected result decreases even if the rules of Agri-technics are fully followed. In this process, it is advisable to use insurance services only to reduce losses. Also, ensuring such risks are very expensive, and the high level of risk has affected the market price of these consumer goods.

Permanent risks: include pure and speculative, specific and covariate, as well as cases with high and low levels of risk at all stages of agricultural production organization. We must remember that insurance covers only a part of the risks, that is, the part where the probability of management is very low. Even assuming that insurance fully covers the net risks, residual risks that cannot be insured, such as price risk, supply chain risk, institutional and political risks, are serious enough to cause regular losses to farmers in foreign countries. , including the system of insurance of the risks during the vegetation period of crops, as well as the losses due to price changes, as it exists in the USA, should be implemented. Then the farmers will receive accurate information about which types of agricultural crops are relatively high-efficiency or less likely to cause damage.

Price volatility: the relatively high frequency and severity of risks is often due to limited access to accurate information. Also, forecasting markets and obtaining accurate information require relatively high costs⁵. Therefore, many farms do not prefer to use these types of services. In this process, it is possible to provide accurate information to a number of farmers based on the forecast of the market situation received by the insurance company. If the insurance premiums are reduced in this case, the benefits provided by the government should be increased, which will certainly lead to the violation of market laws. Consumers compare the cost of a product with the expected value or benefits it provides. Insurance products often fail this litmus test, including agricultural insurance. If the balance between costs and benefits can be favorable to consumers, imposing artificial price restrictions will not be a complete solution to the problem.

Attitudinal Issues: There are several factors that prevent consumers from fully utilizing insurance services. It should be remembered that insurance is a financial instrument, in which the full acceptance of the obligation (payment of the premium) is real and immediate, and the benefits are long and conditional. For this reason, the mental mathematician often thinks of a reward as a "loss" rather than a "cost".

⁵ A fixed amount or percentage of an insurance claim that is the responsibility of the insured and which the insurance company deducts at the time of claim payment

In conclusion, Agricultural insurance can reduce the risks of farmers and ranchers and increase average yields and incomes. It also provides farmers with additional financial resources along with expanding access to credit. However, agricultural insurance is a more effective risk management. De-risking and making agriculture a viable activity requires comprehensive support from many stakeholders, including the private sector. Governments and development agencies must play a major role in partnering with private reinsurers, technology providers, data providers and financial institutions. They should do this as part of their agricultural risk management strategy by introducing sustainable risk sharing and product transfer schemes and products that enhance the financial stability of farmers.

References.

1. Decree of the President of the Republic of Uzbekistan, No. PQ-5017 dated 03.03.2021.
2. Decree of the President of the Republic of Uzbekistan, dated 14.06.2021 No. PQ-5146.
3. Swiss Re. 2013. Partnering for Food Security in Emerging Markets. Sigma No 1/2013. Zurich, Switzerland.
4. O. Mahul and C. Stutley. 2010. Government Support to Agriculture Insurance: Challenges and Options for Developing Countries. Washington, DC: World Bank.
5. A fixed amount or percentage of an insurance claim that is the responsibility of the insured and which the insurance company deducts at the time of claim payment.