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CLIMATE CHANGE: CHALLENGES FOR FOOD AND SOCIAL SECURITY

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RISK MANAGEMENT IN AGRICULTURE AND ADAPTATION TO THE CLIMATE CHANGE

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The study examines agricultural risk management policies in Russia and its response to conditions of climate change. Two types of policies are analysed: individual yield insurance triggered by observed yield shocks on the farm and ex post payments triggered by a large systemic shock. The impact of climate change differs depending on the location. For example, the most reliable sources now prove that climate change will increase production risk, measured by yield variability of the main crops in Russia. In the Southern Far East there is evidence that some crops show increased production risk and others show reduced risk. This research provides valuable information of the policies interact with risk management and adaptation strategies, and how to solve the problems of the policy-making under strong uncertainties. There are strong links between risk management and adaptation policies, and government responses to protect farmers from climate change risks that will affect their strategies. For example, support of insurance schemes and of ex post payments may reduce the incentive to diversify farm production giving up production of more climate sensitive crops and farm practices. In this sense these government supported instruments can potentially crowd out appropriate adaptation strategies by farmers.

Keywords: *climate, agriculture, risk, Russian Far East.*

Introduction

Agriculture, due to its origin is inherently sensitive to climatic conditions, and is among the most vulnerable sectors for risks and impacts of global climate change [2, 3]. The agricultural sector of the Russian Far East (FE) shows good results over the last five years, however, the climate cannot be called favourable for full development of agriculture, which is accompanied by many risks.

Extreme weather events repeat quite often, which leads to significant losses for agriculture. Heavy precipitation in the form of heavy rainfall brings serious damage to agricultural crops. At the same time hot and dry weather occasionally takes place, which also negatively effects upon the growth and development of crops. According to the publication of Sigma (Swisre), the trend of rising catastrophic losses and natural disasters is observed in the world. Some experts directly bind this fact to the risk of climate change affecting the economic system, food security, infrastructure, and people well-being. In the mean time the gap between the damage total size and insured losses is increasing [1].

One of the largest in the last 120 years flood in the FE occurred in 2013. It brought massive destruction and made the State to come back to talking about insurance of risks in agriculture. The total flood damage caused to farmers was estimated by the Ministry of Agriculture of Russia more than 80.6 mln dollars. This amount is approximately equal to the entire premiums of the agricultural insurers under contracts with the State for 2013. Farmers of the Far East, most often used to insure crops of soybeans, corn, rice, wheat and vegetables: potatoes, cabbage, sugar beets.

The total area of agricultural land in the Far Eastern Federal District is about 1.68 mln hectares. 37% of the area suffered from floods and only 7% were insured with state support. In the Amur region crops were insured on the area of 39.5 thousand hectares, that was 5% of the cultivated area. In Primorsky Krai they insured 41.1 thousand hectares (11% of the cultivated area), in Yakutia – 10.2 thousand hectares (23.3% of the area). In Khabarovsky Krai, Jewish Autonomous Region and Magadan Region, crop insurance was not conducted. Flooding in 2016 once again made people to talk about the problems with the system approach to the insurance of agricultural risks.

Materials and Methods

Theoretical basis of this article became research works of the scientists who studied the demand and efficiency of different instruments of the policy man-

agement in risks, when agriculture is differently affected by the climatic changes. Studies show that without adaptation, climate change is generally problematic for agricultural production and for agricultural economies and communities; but with adaptation, vulnerability can be reduced and there are numerous opportunities to be realized [2, 3].

While conducting the research the authors used the general economic methods (observation, dialectic, comparative and the system method).

Results and Discussion

The Government programs in agriculture and insurance are institutional responses to the economic risks associated with climate change, and have the potential to influence farm-level risk management strategies. These include government agricultural subsidy and support (to decrease the risk of climate-related income loss, and spread exposure to climate-related risks publicly); private insurance (to decrease the risk of climate-related income loss, and spread exposure to climate-related risks privately); and resource management programs (to decrease the risk of climate-related retirement from agricultural use of agricultural land).

Agricultural subsidy and support programs involve modifications to and investment into established and ad hoc government programs. Ad hoc programs provide compensation for disaster-related income loss independent of the support provided by the established crop insurance, income stabilization and farm production subsidy, support and incentive programs [5]. Ad hoc programs greatly influence farm-level production and management strategies by transferring risk in agriculture [4].

State participation in agricultural insurance is implemented through the provision of subsidies for reimbursement a part of the costs of agricultural producers for the insurance premiums payment on the contracts of insurance [5]. On the basis of the model of the system of State support for agricultural insurance in Russia the principle of co-financing is placed, which provides allocation of funds from the Federal and regional budgets. In subsequent years this system was constantly changed being directed to its improvement, in particular:

- reduced financial burden on agricultural producers in two ways. Firstly, they pay only 50% of the insurance premiums under the insurance contract. Previously they did insurance fee in the amount of 100% of the award and for a long time waited for 50% subsidy. The remaining part of the insurance premium is paid by the authority of the Office of Agriculture of the Russian Federation to the current account of the insurer. Secondly, it is provided to use method of unconditional deductible (participation of the insured in the Risc) ranging from 0 to 40% of the insured amount;

- agricultural insurance with the State support was carried out only against the risk of loss (death) harvest crops, perennials. Here in the loss refers to an actual reduction of crop yield by 30% or more than planned. As for perennials – that means perennial plantings viability loss by more than 40% of the areas.

The objects list of agricultural insurance for crop production and livestock production which are supported by Government, was expanded. They expanded list of dangerous natural phenomena caused the occurrence of the insured event. In addition the list included such phenomena as the dry wind, strong wind, and natural fire. In addition, the list of risks included violation of the electrical supply, thermal energy, and water as a result of natural disasters for the insurance of agricultural crops grown in greenhouses or on the reclamation lands. The agricultural risks insurance with the State support is carried out by insurance companies that are members of the Association of insurers. In the event of bankruptcy of one of the insurers premium is paid from the compensation fund.

In recent years, a number of measures have been taken for the development of this direction, in particular, certain regions have introduced additional support from regional budgets to pay the insurance premium, and farmers compensated for about 90% of the value of the insurance policy.

The development of private insurance represents the climate risk management tool that is primarily the responsibility of the financial services sector, which, in turn, is usually influenced by Government programs. This involves the development of insurance schemes by private companies to recoup crop and property damage from such climate-related hazards as droughts, floods and other climate-related events.

Despite the fact that this risk management tool has the potential to reduce vulnerability at farm level, its implementation in Russia is limited by the availability of existing problems with which farmers have experienced in practice. Among them are: a small amount of weather stations, that eliminates the possibility of obtaining objective information on the occurrence of the adverse factors affecting crop productivity; the criteria system of natural hazards for crops for different climatic zones is not developed.

Floods in the FE showed that crop damage as a result of the flooding is not an insured event (the law provides only risk “water-logging of the soil”). However, the risk of “flood” is included into the list of events for insurance of agricultural animals. Therefore, the definition of the criteria of the most dangerous weather phenomena should be more clearly written down in the law, taking into account climatic charac-

teristics of individual regions of the country. The regulatory framework which helps to settle the losses needs to be improved. The loss settlement process should be standardized, unambiguous in terms of the approach to natural hazards criteria.

They do not ascertain what damages should cover the farmer himself, including through insurance, and in what cases the State should help. It's impossible to insure only part of the acreage. That is, if the agricultural producer grows crops on different plots, each of which is characterized by a certain level of risk, he will have to insure the entire area, regardless of whether it is exposed for risks or not. When agricultural producers operate in the conditions of the funds shortage, a small part of them will agree to insure the area with a low probability of risk. As a result, insurance companies do not often want to insure agricultural crops, especially the risky territory. Only 7 out of 256 insurance companies in the Far Eastern Federal District insure agricultural risks under contracts with the State support.

Adoption of the Law on Single Subsidy in January 2017 contributed to the reduction of insurance of risks in agriculture. A single subsidy mechanism allows regions to spend the subsidy for the State support permitted by the law. The regions used to refuse the subsidy for crop insurance, and began to allocate funds of the State support for agricultural insurance for other purposes. There are 28 territories in the Russian Federation with a high level of weather risk for harvest; 15 regions of this group are not planning support for the insuring in 2018. Especially harmfully it effected upon insurance risks in crop production, where the insured with the State support area, as a whole in Russia, decreased from 4.1 to 1.3 million hectares in 2016. For example, in Primorsky Krai, the number of contracts on insurance of crop yield in 2017 decreased more than 2.5 times, from 306 to 112. As for the crop insurance with the State support it decreased almost six times, to 26.

Conclusion

Insurance of agrarian sector of economy is one of the most complex and expensive insurance products, as in Russia, many regions belong to the zone of risky agriculture. However, as the World practice shows, it is the most reliable way to protect farmers from large financial losses. That is why in many countries insurance is the only type of insurance in which the state participates directly. This factor is important to take into account when establishing priorities of the national agricultural policy. To make efficient use of the planned resources, it is necessary to improve constantly the conditions of agricultural insurance, and procedure for the State support. It will contribute to the expansion of agricultural insurance and will bring more complete compensation for the loss of farmers through insurance mechanism.

It is important to pay attention to the following aspect. When Russia joined the World Trade Organization, they succeed on a high level to get support for our agricultural sector of $9 billion/year. Some experts suggested that the Russian budget is unlikely to be able to find the money allowed by WTO for the support of domestic agricultural sector. But no matter how the situation with the State support develops, its level, according to the signed Agreement, will permanently reduce until 2018. Under these circumstances, subsidies for agricultural insurance is not only a source for its expansion (WTO rules do not contain any restrictions on the subsidies for insurance), but is also an important contribution of the State into rural development at all.

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