RISK MANAGEMENT MECHANISMS IN AGRICULTURAL HOLDINGS IN BULGARIA

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Abstract: *The agrarian sector is exposed to various types of risks that occur at high frequency and result in many variable outputs for production: production issues, market problems, climate change, etc. The paper dwells on key strategic actions and solutions for agricultural risk management, which can be divided into two main types: informal mechanisms and formal mechanisms. Using informal mechanisms, farmers look for an opportunity to avoid risk on their own. The formal mechanisms are presented on a market or public basis. An analysis of risk management mechanisms in agricultural holdings in Bulgaria is carried out, focusing on public support instruments. It is assumed that risk management measures in agriculture should be rather complementary to financial incentives for the development of science, technology, farmers' awareness, etc.*

Keywords: *risk; risk management; risk reduction; risk mitigation; coping with risk*

1. INTRODUCTION

Agriculture is a sector characterized by particularly high risks, mainly as a result of natural processes linked to the production of agricultural produce, which are beyond the control of farmers and increase their insecurity and instability. Farmers have many opportunities to manage risk in their businesses, usually combining different strategies and tools. Since farmers differ in their attitudes towards risk, not everybody can implement risk management in exactly the same way. While large farms can use a wider range of risk management tools and strategies, small farmers are more risk-sensitive and their risk management instruments are more limited. Assessing the effectiveness of the various risk management strategies and tools requires an understanding of the risk-return ratio of the different farms.

Many of the risks in agriculture are interconnected and can involve a large number of farmers and farms, which requires government intervention. Conducting a specific agricultural policy on risk management in agriculture is important and therefore requires that the issue be studied. Agricultural risk should be understood as an interconnected system in which farmers, markets and governments interact and offer a specific set of risk management measures and strategies in agriculture.

The purpose of this paper is twofold. Firstly, drawing on the nature and sources of risk in agriculture, to propose strategies and instruments to overcome the production risk for agricultural holdings. Secondly, to analyze and propose public measures and instruments for agricultural risk management within the framework of the Common Agricultural Policy of the European Union, in the light of their effectiveness and impact.

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2. THE NATURE OF RISK IN AGRICULTURAL HOLDINGS AND RISK MANAGEMENT

Risk in agriculture can be seen as the uncertainty affecting the welfare of farmers. Risk is most often associated with a reduction in the return on investment and the losses that may be suffered as a result of this uncertainty. Individual farmers have to introduce a set of activities in production and trade which very often produce uncertain results affecting their welfare. According to the OECD (2000) [11], the risk in farming is specific and is distinguished from the risk involved in other businesses in terms of production conditions, the spread of diseases and pests, the impact of climate change, the uncertainty of agricultural commodity prices, implementing specific policies concerning food safety and environmental protection, etc.

Huirne et al. (2000) [6] and Hardaker et al. (2004 [3] distinguish two main types of risk in agriculture. First, business risk includes industrial, market, institutional and personal risks. The production risk is due to the unpredictable weather and productivity of crops and animals. The market risk is related to uncertainty about the cost of production and, sometimes, inputs when taking decision concerning production. Institutional risk is due to government actions and rules such as laws governing the disposal of animal manure or the use of pesticides, tax regulations and payments. Personal risks stem from uncertain life events such as death, divorce or illness. Secondly, financial risks arise from different methods of financing the farm, changes in interest rates and access to loans. Musser and Patrick (2001) [9] followed Baquet et al. (1997) [1] and identified five major sources of risk in agriculture: production risk; market risk; financial risk; legal risk and human risk. Moschini and Henessy (2001) [8] prefer to talk about sources of insecurity in agriculture by separating four different sources: production uncertainty; price uncertainty; technological uncertainty; political uncertainty. According to Bashev (2013) [2], the risk related to the agrarian sector is any current or future danger with a significant negative impact. It is either unsystematic (incidental, unlikely, due to an unpredictable event), or systematic (very likely, due to a predictable event). Regardless of the degree of systemic occurrence and the likelihood of such occurrences, they may derive from nature, technology, human decisions and potential (risk strategy, mismanagement and criminal action, lack of knowledge, information and training) or a combination of these sources of risk.

Farmers have many risk management options, most of them combining different strategies and tools. Farmers face a variety of situations; they have different preferences for risk and return, allowing them to make decisions based on their specific situation. It is argued in the literature [4] that understanding farming risk is important for two reasons. First, most farmers are inclined to take risks when faced with risky results. Those who are more risk-sensitive are willing to accept lower returns because of the lower uncertainty by making a compromise depending on their propensity to avoid risk. Therefore, risk management strategies and tools should not be considered only in terms of expected returns. Secondly, understanding risk helps farmers to circumvent unwanted events, share them or mitigate them to prevent bankruptcy. Therefore, risk understanding should be seen as a starting point in helping farmers make rational management decisions in situations of insecurity and instability.

Risk management in agriculture should not only involve its avoidance, but must be related to finding the best combination of mitigation, reduction or sharing of negative results [3]. Therefore, risk management should include:

1) Identification of potential risk events;
2) Measuring the likely adverse outcomes of the occurrence of risk and its consequences;
3) Adopting a set of actions to overcome the negative results arising from the occurrence

of risk;
4) Risk recovery and creating risk management systems.

The wide variety of risks associated with farming activities naturally generates a variety of opportunities for managing it. There is a certain level of interconnection between the risks from different sources, where the frequency of occurrence and the degree of impact have a great influence. For example, risks associated with frequent events that do not cause large losses can be considered normal (price fluctuations) and are subject to management within the farm. At the same time, events that are uncommon, but can contribute to large losses and have a catastrophic nature (natural elements, disease spreading, etc.) require that solutions are sought outside the farm. The interconnectedness between farms and risk is also important for implementing activities according to the number of farms concerned: whether few farms are affected (the risk is unsystematic) or if a large number of farms are affected (the risk is systematic). Systematic risks are more difficult to manage within the sector and therefore market-based or publicly-delivered mechanisms are needed.

3. RISK MANAGEMENT INSTRUMENTS IN AGRICULTURAL HOLDINGS

Farm risk management includes a choice of different mechanisms to mitigate the effects of risk. This choice usually requires an assessment of the trade-off between the changes in the level of risk, the expected returns, the entrepreneurial freedom and other variables. Some of the risk management strategies reduce the risk arising from the organization's activities; others transfer the risk outside the holding, while still others support the building of farmers' risk-taking capacity. Therefore, risk management on agricultural holdings does not necessarily involve risk avoidance; it rather requires finding the best combination of risk and return, accounting for people's potential to handle a certain degree of possible outcomes. Effective risk management involves anticipating possible outcomes and planning a strategy, taking into account the likelihood of events occurring and their possible consequences, rather than merely responding to events when they occur.

Depending on the moment of the risk response, the risk management strategies and decisions in agriculture can be grouped into two main varieties – preliminary strategies („Ex-Ante“) where the farmers' reaction takes place before the occurrence of potential adverse events and follow-on strategies („Ex-Post"). Three risk management solutions can be identified:
1) Risk reducing solutions and strategies (preventive action) that reduce the likelihood of adverse events occurring.
2) Risk mitigation solutions and strategies that aim to reduce the potential impact of an adverse event in case it occurs.
3) Strategies and solutions for coping, which aim to alleviate the impact of a risky event after it has occurred.

While the first two groups of risk prevention and risk mitigation strategies focus on incomes, coping strategies focus on consumption. Risk management strategies and decisions in agriculture are created on the basis of agreements reached at different institutional levels - at farm or community level, market-based mechanisms and government policy.

Depending on the nature of the strategies and decisions concerning risk management in agriculture, two main types can be distinguished: informal mechanisms and formal mechanisms. Using informal mechanisms, farmers look for an opportunity to avoid the risk on their own. These mechanisms are rather unofficial and the extent to which they will be used

depends on the individual propensity to risk of the individual farmer. Formal mechanisms are market-based or publicly delivered.

Table 1. Strategies and tools for risk management in agribusiness

	Farm /holding, community/ level	**Market-based**	**Publicly delivered**
Risk Reduction	• Avoiding exposure to risk; • Diversification of production; • Maintaining stocks of liquid assets; • Application of good agricultural practices.	• Risk Management Training	• Macroeconomic stability; • Insurance system; • Protection of property; • Extension services; • Supporting the supply of resources; • Plant protection control; • Infrastructure maintenance.
Risk Mitigation	• Sharing of production solutions; • Sharing of equipment, warehouses, inventory, irrigation systems, etc.; • Informal association.	• Vertical integration; • Market derivatives; • Contract farming; • Insurance.	• Tax Reliefs; • Subsidies; • Phytosanitary and veterinary border controls.
Risk Coping	• Reducing consumption; • Borrowing money from friends and neighbors; • Seasonal or permanent migration • Other employment; • Mutual assistance.	• Assets sale; • Diversification of income sources; • Savings and bank loans.	• Agricultural support programs; • Social support; • Restructuring and debt assumption; • Aids; • Assistance after disasters and catastrophes.

Adapted from R. Holzmann and R.Jogersen [5], *OECD* [12], *World Bank* [7],

4. PUBLIC SUPPORT IN RISK MANAGEMENT IN AGRICULTURAL HOLDINGS IN THE EUROPEAN UNION AND BULGARIA

EU policy on risk management in agriculture has evolved over time at both national and community level. At national level, Member States are focusing on production risks arising from adverse climatic conditions and sanitary and phytosanitary conditions [13]. Different EU countries apply different approaches to risk management in agriculture, both in terms of scope and institutional implementation. At the current stage in the development of the EU's CAP, the policy structure has been fundamentally changed, with previous price support being transformed into direct payments to EU farmers. This has led to the "opening up" of markets to the impact of international prices, while CAP's Pillar I grant has provided a certain degree of income stability for farmers. Although not designed as an instrument for managing risk in agriculture, direct payments have an important role to play in addressing income fluctuations and protecting against production risk.

However, the system of direct payments will gradually be transformed. They are an expensive tool to achieve the CAP objectives, which increases the administrative burden on farmers. Subsidies are not evenly distributed among the individual producers and among the different

branches of agriculture. As far as direct payments support production factors, they rather lead to higher farmland prices and worsen the competitiveness and demographic structure of the sector. In some non-EU countries (US, Canada, Brazil, etc.) (OECD, 2009) [12], a variety of support mechanisms are used, focusing on controlling various risks in agribusiness. In other countries (Australia and New Zealand), subsidies are totally missing, and government support is provided for the sector's infrastructure.

Support for price risk involves farmers receiving payments when the market price of their produce in a given year falls by a certain percentage below a pre-established reference price. A major drawback of this support is the setting of the reference price, which may be very high or very low for the reference period. In addition, farmers become more indifferent to the price level. Another issue concerning this support is the reliability of the price data in Bulgaria.

The Revenue Risk Facility aims at helping farmers to protect farms in years of lower yields. When the revenue generated for the year differs by a certain percentage from the reference revenue, farmers receive payments based on the difference between the two figures. The disadvantage of this mechanism is that it increases the moral risk farmers: not to adhere to good production practices, to undertake reckless experiments, to make risky choices for agricultural crops, etc.

Insurance has an important place in managing farm risk from damages outside farmers' control. Subsidies for insurance policies are an appropriate mechanism for managing climate risk.

The Pillar II measures of the CAP also contribute to risk mitigation and provide support for agriculture. The measures are important for mitigating the impact of natural disasters and climatic risks, supporting the restructuring of the physical potential, promoting diversity, training farmers in risk reduction strategies, improving the health and living environment of people and farm animals. There are three risk management mechanisms in the EU's 2014-2020 Rural Development Programs:

1) Assistance in insurance premiums. A part of the insurance premium against economic damage suffered by farmers due to unfavourable climatic conditions, animal and plant diseases, pest spread, and environmental crises are subsidized.
2) Mutual funds. Farmers participate in contributions to a mutual fund that pays compensation for damage from adverse climatic events, illnesses or ecological crises.
3) Stabilization of income. This mechanism is new to the EU's CAP. It operates in the form of a mutual fund, the payments of which are related to farm income, including some market risks.

The most widely used mechanism within the EU is insurance subsidies. Mutual funds and income stabilization are used less often, and their costs are minimal. In Bulgaria, the risk management measure has been dropped in the last Rural Development Programme option and direct payments are the main income support mechanism. Farmers rely heavily on preventive risk reduction strategies, mainly through diversification of production and the application of good practices. Risk sharing is still at a low level. Harvest and animal insurance, although organized at a high level, is not yet widely implemented [10].

5. CONCLUSION

Farmers have many opportunities to reduce, mitigate or overcome risk, but choosing the right strategies depends mostly on the nature of the risk itself and the subjective attitude of farmers. Governments can also play an important role by creating conditions and supporting farmers, so that farmers can reasonably manage the risk in farming. The implementation of public support mechanisms raises a number of challenges, especially of a technical nature, requiring a lot of effort in this direction. Risk management support measures must be a complementary financial incentive for the development of science, technology, infrastructure, and the educational attainment of the agricultural labour force.

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