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## Agricultural insurance schemes for the development of rural economy

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# AGRICULTURAL INSURANCE SCHEMES FOR THE DEVELOPMENT OF RURAL ECONOMY

ABDUL RAHMAN IBRAHIM<sup>1</sup>

## Summary

*In the last decades, agricultural production became more and more expensive. Nevertheless, there are a lot of risks that affect agricultural production and agricultural producers' income. This income instability determines many of them abandon their business. The paper will approach the agricultural risk management from the perspective of agricultural insurances, with a general presentation at EU level, and a special focus on the situation of Romania and Turkey. There will be analyzed the factors which contribute to the development agricultural insurances, as well as the effect of the later on the development of the agriculture sector in each country. The aim of the paper is to improve the understanding of the importance of the agricultural insurance schemes as a risk management tool and of its role in increasing the agricultural production in Romania, given that the rural area in this country is subject to many climatic risks which affect its stability. An important input of the paper will be the good practice of Turkey in this field. General conclusions and considerations will close the whole paper. The author will use different information sources from European and national level, such as reports, country fact sheets, etc...*

**Keywords:** agriculture insurance, rural area, risk management

## INTRODUCTION

There are a lot of risks that affect agricultural production and agricultural producers' income. Nevertheless, the major risks which are of concern to the agricultural sector are (1) price risk caused by volatility in prices and (2) production risk resulting from uncertainty about the levels of production that primary producers can achieve from their current activities.

Even if the risks in the business of agricultural production cannot be avoided it can be a manageable element. Concern for risks that stifle investment and contribute to vulnerability of the rural poor is a driving force behind various types of agricultural insurance. Agricultural risk management relies on a combination of technical and financial tools which can be used to deal with the multiple sources of agricultural risk. In order to avoid risk, agricultural producers may transfer all or part of the risks to third party through an insurance contract.

Traditional risk management strategies have often proven not to be sufficiently effective in preventing serious economic loss or permitting a speedy recovery. One of the most important tools in risk management strategies is agricultural insurance, which is reemerging as a topic of interest, especially in the light of the need to improve agricultural competitiveness. Even if, the content of insurance is shaped by geographical location and climatic conditions, and insurance schemes cover those risks which affect agricultural production the most, there are common features which can be applied. The challenge is how to overcome obstacles and deliver efficient and sustainable agricultural insurance products. The principal obstacles are lack of high quality information, inadequate regulatory frameworks, weak supervision, lack of actuarial expertise, lack of professional expertise in designing and monitoring agricultural insurance products, a mass of low-income, dispersed clients, who may not be willing or able to pay actuarially sound premiums for multiple peril products, and the tendency of governments to undermine market development through inappropriate use of subsidies and disaster relief funds.

The paper will define what is meant by agricultural insurance, will present different types of agricultural insurance, and will explain the challenges of this type of insurance.

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## MATERIAL AND METHODS

The data used for documenting the paper was collected mainly through desk research. Different information sources from European and national level, such as reports, country fact sheets and articles were consulted.

## RESULTS AND DISCUSSIONS

### Definition and Types of Agricultural Insurance

In general, insurance is a form of risk management used to hedge against a contingent loss. The conventional definition is the equitable transfer of a risk of loss from one entity to another in exchange for a premium or a guaranteed and quantifiable small loss to prevent a large and possibly devastating loss.

Agricultural insurance is a special line of property insurance applied as a financial tool to transfer production risk associated with farming to a third party via payment of a premium that reflects the true long-term cost of the insurer assuming those risks. Agricultural insurance is not limited to crop insurance, it also applies to livestock, bloodstock, forestry, aquaculture, and greenhouses.

In many countries, the public sector involved in the provision of agricultural insurance, insuring small scale farmers against crop losses to adverse weather or other hazards. With few exceptions, such interventions have encountered severe problems owing to high administrative costs, moral hazard, and adverse selection. Government interventions should be aimed at improving the accessibility and quality of private sector insurance.

The most important types of agricultural insurance are:

*Single-risk insurance*: provides coverage against a single risk (peril). Among agricultural insurance mechanisms, hail insurance is one of the most widely applied single-risk insurances. The single risk insurance can also be supported by the private insurance companies since the risk is not systematic.

*Combined (Peril) Insurance*: known as multi-risk insurance in several countries, the insurer provides coverage against more than one risk. Hail and frost is a good example of combined (peril) insurance. In many cases, the coverage is extended to fire, earthquake, lightning, and other nature-related disasters.

*Yield Insurance*: insurance provides coverage against fluctuations in the farm yield. Thus any risk factor that affects the farm's productivity is covered by the yield insurance. These risks can be listed as, but not limited to flood, drought, frost, hail, disease, fire, etc. Usually, coverage against these risks is presented under a single policy, namely, multi-peril crop insurance policy. This is an costly coverage since almost all risks are covered. The difference between the premium farmer is willing to pay and the insurer's willingness to accept is subsidized by the government.

*Price Insurance*: this type of insurance provides coverage against fluctuations in the product prices. Thus, if the product price falls below a pre-specified level, indemnities are paid according to the insurance terms.

*Revenue Insurance*: provides coverage against changes in farm revenues. Since revenue equals price times quantity, revenue insurance offers protection against both price and quantity fluctuations.

*Whole Farm Insurance*: provides coverage against changes in the farm's yield or revenue. The farm revenue insurance is a special case of revenue insurance where the farm's entire activities are insured including but not limited to agricultural activities.

*Income Insurance*: This type of insurance provides coverage against the fluctuations in the farmer's incomes. Income is defined as the difference between revenues and costs. Thus, the income insurance covers risky changes in yield, price, as well as cost of production, since it covers all factors affecting the income of the farmers.

*Index Insurance:* The definition of the index insurance is based on the type of the index used to determine the losses. The index insurance provides coverage against the fluctuations in farmer's yield, revenue, or any other factor that affects the farmer's income. Usually, an external index, which is highly correlated with farmer's income is used as a threshold parameter. Once the index reaches the threshold, indemnities are released according to pre-determined conditions. There are two types of risks faced by the farmers. The general risk, such as low-yield in the area or high-temperature in the area (draught) is covered by the index insurance. Consequently, index insurance can be easily implemented in homogenous areas where several farmers face similar risks. However, the basis-risk is farmer specific. Thus, it is not covered by the index insurance. As an example, consider two farmers. The first farmer's output is significantly affected by the drought in the area whereas the second farmer's output was not affected. The indemnities will be released as long as the index reaches the pre-determined threshold. While, that might seem like a drawback of the system, the index insurance naturally eliminates moral hazard issues. The farmer's will still perform mitigation activities even if they are covered under index insurance.

### **The Situation of Agricultural Insurance at EU Level**

The risk and crisis management strategies at the level of EU are not currently integrated in the CAP (Common Agricultural Policy). Nevertheless, the European Commission and other EU institutions have elaborated several documents which review the agricultural risk management systems in the European countries.

*Risks and crisis management in agriculture: University of Naples (2005)* represents a study carried out for the European Parliament in 2005, and provides comments on the three options considered by the Communication of the Commission to the Council (EC, 2005a). The report is very critical with the first option (public participation on the insurance premium paid by farms and on the re-insurance scheme), obviously in contrast with the position of insurance companies. When commenting the possibility of a Common Agricultural Policy that would subsidize agricultural insurances, one of the points criticized in this report is that a substantial amount of the subsidies would be given in fact to the insurance companies, instead of finishing in the farmers' pockets.

*Risk Management Tools for EU Agriculture, with a special focus on insurance (EC, 2001).* The conclusions of this study do not look at a direct involvement of the EU on risk management systems, but rather propose that the EU has an accompanying or framing role. More specifically:

- Regarding price risks, it shows potential interest in promoting the development of futures and options markets
- Regarding production risks, it is considered that insurance systems are to be developed by the member states on a bottom-up approach. Co-insurance and re-insurance can be developed at the European level by private companies, under a common legal framework, but re-insurance could also be provided by the EU
- Anti-cyclical income support would be interesting to apply but it has some caveats or cons.

*Income insurance in European agriculture* The central questions studied by this report are whether there might be a case for farm income insurance in Europe in the future, under what conditions and in what form might such an income insurance scheme be feasible. The report explores a number of issues such as insurance coverage, loss assessment, multi-year versus single year insurance contracts, mandatory versus voluntary participation, etc. Feasibility is tested with a Monte Carlo simulation using panel data from six Member States. The investigation also includes a description of the agricultural sector in Europe and a review of current experiences on income insurance in other countries.

Some of the main conclusions are that, if a form of income insurance is introduced in Europe, it is recommended that:

- Gross revenue insurance should only be considered for crop, and not for livestock, commodities.

- Insurance should start with true market commodities, i.e. commodities for which no price support is available.
- If governments provide reinsurance (at zero costs, at fully commercial rates, or as a combination of these two options) they should only reinsure part of the risks underwritten by insurers.
- Before wide introduction, first some pilot tests should be carried out, to test the interest of farmers in insurance schemes that cover systemic risks such as floods, droughts and epidemic diseases, as well as the interest of insurance companies in setting up (mutual insurance funds for) such schemes. In setting up such pilot tests it is crucial for later implementation that governments are involved to no more than the necessary minimum extent, using transparent rules for such aspects as stop losses, i.e. from the beginning there should be no asymmetric information between insurers and governments.

### **The Turkey's Experience in Agricultural Insurance**

Agricultural insurance schemes in Turkey were first introduced in 1957 and these schemes have been maintained as animal and hail insurances.

Two programmes were available to help crop producers recover from the financial effects of natural disasters and protect them from unavoidable risks associated with adverse weather:

- Government Aid Programme
- Private insurers

Turkey has adopted a very similar system to the Spanish management structure, which allows those involved to cooperate on an effective platform in order to further develop the system defining risk management responsibilities. It meets all the following requirements:

- Mechanisms for public-private dialogue.
- Continuous updating using the contents of agendas.
- Development of policy tools for dialogue with the Government.

The main drive for the first companies which introduced these schemes was to protect the crops and animal products of farmers.

The total harvesting land in Turkey is 24.4 million ha of which 98% is exposed to hail risk and 47% to other natural risks. From a total of 40 insurance companies in Turkey, 9 are providing agricultural insurance services [1], which makes agricultural insurance share be 1.8 % in the insurance sector in Turkey [7]. Despite supporting farmers by financing 50% of agricultural insurance premiums by government [7], improvement of agricultural insurance is still back.

In 2005, with the agreement of government and the private commercial insurers, legislation was enacted under the Agricultural Insurance Law No 5363, dated June 14, 2005, to create an Agricultural Insurance Pool under the administration of a new managing underwriter, TARSIM, and to define the role and functions of federal government support in the form of financial subsidies and excess of loss reinsurance protection.

Tarsim Pool is a public-private partnership involving the government, the private insurance companies, and supporting organizations (insurance association, Ministry of Agriculture, etc). A management committee comprised of representation from each of these organizations is responsible for policy decisions regarding the operations of the Pool, for determination of crops, risks, and regions to be supported, and for determination of subsidy levels.

The TARSIM Agricultural Insurance Pool functions as a conventional coinsurance pool, and its shareholders and coinsurers include the 16 former agricultural insurance companies, each with a 6.25% share in the pool. The coinsurers issue TARSIM's approved and standard insurance contracts (policies) on their own paper; the companies receive an agreed commission for bringing business to the Pool, and all risks and premium are 100% ceded to the Insurance Pool. TARSIM is responsible for product design and setting standard rates, for premium collection, for loss assessment and claims settlement, and for reinsurance arrangements.



The agricultural GDP in Turkey is increasing year after year as we see in next table which it shows in 2002 was 23.7 billion\$ and it arrived to 62.7 billion \$ in 2011.

**Table 1 : Agricultural Growth**

Years	Agricultural GDP(BILION\$)	Agricultural Growth
2002	23.7	8.8
2003	30.2	-2
2004	37	2.8
2005	45	7.2
2006	43.5	1.4
2007	49.5	-6.7
2008	56.4	4.3
2009	51	3.6
2010	61.7	2.4
2011	62.7	5.3

Source: Turkstat

TARSIM offers a wide range of specialist agricultural insurance products. The company does not underwrite multi-peril crop insurance (MPCI) covers. Rather, it offers a named-peril hail policy plus additional perils for all crops. For fruit and vegetables and ornamentals additional cover may be purchased against frost damage. The company also underwrites a material damage policy for loss of greenhouse structures and the crops grown under cover.

The company insures dairy cattle against a wide range of perils including diseases, but excluding notifiable diseases, and a similar comprehensive cover is offered for poultry. The company also underwrites a marine aquaculture policy against a wide range of perils including pollution, diseases, and algae bloom.

Public support to agricultural insurance is important in Turkey. The government provides a wide range of support under the new TARSIM Pool arrangement including:

- Agricultural insurance legislation enacted in 2005 to create the national Pool Scheme and to define the roles of public and private sectors;
- Agricultural insurance premium subsidies, which are fixed at 50% of the premium cost for both crops and livestock and which are paid by government directly to the Pool (TARSIM);
- Subsidies on TARSIM's administration and operating expenses and on loss adjustment expenses;
- Government support to the reinsurance program; and
- Agricultural insurance premiums sales tax exemptions.

### **Agricultural Insurance in Romania**

Agricultural insurance in Romania started in 1871 when the first mutual insurance groups originated. The first agricultural insurance company was founded in 1906. During the Socialist period agricultural insurance was provided through the state company, ADAS, which insured farms and operated as reinsurance capacity. Agricultural insurance was mandatory. After 1990 agricultural insurance was reformed and became voluntary. Natural disasters had a very negative impact on agricultural production during last five years. The country suffered from droughts (2002, 2003), winterkill of crops (2003), and floods (2004, 2005, 2008). These disasters transformed agricultural insurance from an expensive risk mitigation tool into an important risk instrument. The agricultural insurance is currently undergoing changes under the leadership of the government.

Several companies offer crop and livestock insurance services. The list of companies participating in the subsidy program is approved by the government. The farmers can get premium subsidies only if they purchase insurance from the approved insurance providers. Romanian insurance companies try to offer different insurance products to meet farmers' demand in risk mitigation. Competition in the market is fierce. Premium rates are set by the private insurance companies individually without control from the government. In 2005 about 70% of the market

(premiums collected) belonged to three insurance companies – AGRAS, Allianz TIRIAC, and ASIROM – but the market structure was volatile and changing yearly.

Insurers offer different insurance products trying to get better access to farmers' target groups. The crop insurance policies are named-peril and can include up to nine weather risks and fire. The risk selection is done by the client. The standard deductible is 10% for field crops and 15% for fruit trees and grapes. Insurers also offer greenhouse insurance. Livestock policies cover all mortality risks except for infectious diseases. The government compensates farmers' losses caused by infectious diseases, so there is no need for insurance coverage of this risk. There is aquaculture insurance in Romania.

Crop Insurance Products Available				Greenhouse	Forestry
MPCI	Named-peril	Crop Revenue	Index-based		
No	Yes	No	Yes	Yes	No
Livestock Products Available					
All Risk	Accident and Mortality	Epidemic Disease	Other	Index Based	
No	Yes	No	No	No	Yes

Source: World Bank Surety 2008

Premium rates are market-based, and the pricing policy is driven by market competition. The average crop insurance rate is 2% with a range from 1% to 3%. AGRAS introduced index policies for small farmers with an area up to 5 hectares. The policy compensates a fixed amount of production cost per area unit.

The agents' network is the primary delivery channel for agricultural insurance products. Brokers are the second most important delivery channel. For livestock insurance the third channel is finance providers. Producer associations and cooperatives are the third channel for crop insurance. There are no special organizations for delivering agricultural insurance to small and marginal farmers. One company (AGRAS) introduced a specific index program for smallholders (1 to 5 ha). Small farmers can purchase agricultural insurance with a fixed amount of the sum insured per ha of USD 180. The premium is USD 5. The insurance coverage is equal to the cost of production of agricultural commodities per area unit (ha) and pays when a crop is destroyed by weather events.

Both crop and livestock insurance are voluntary for farmers. Loan providers can require credit-linked insurance, but this is subject to specific individual policy of finance institutions.

Agricultural insurance in Romania is governed by Law 381, dated June 13, 2003. This legislative document sets the framework for agricultural insurance and government assistance in case of natural calamities.

As of 2008, there is no premium subsidy program in Romania. The government decided to stop the agricultural insurance subsidy program.

According to national statistical data (2006) about 12% of the arable land is insured in Romania. Approximately 18% of commercial farms purchase crop and livestock insurance policies. Considering the total number of farms in Romania is 4.2 million, most of which are small farms with a cultivated area up to 10 ha, the overall participation rate is about 1% (43,003 farms being insured in 2006, out of which 41,818 are crop farms and the rest livestock producers).

In 2007 the government provided subsidies to small farms on the condition they present a valid insurance contract. This government policy increased farmers' demand for crop insurance.

The government provides assistance to agricultural producers in case of disasters. In nearly each of the last five years the government provided ad hoc assistance to farmers suffering from droughts, floods, and winterkill (that is, total loss of winter crops due to unfavorable weather conditions during winter). The government also covers losses of livestock farmers in case of livestock death or slaughter due to epidemic diseases. During 2003 to 2006 the Romanian government provided *ad hoc* assistance to farmers for the total sum of USD 83.6 million.

## CONCLUSIONS

The main conclusion of the research paper is that a successful agricultural insurance system needs the support of the Government. The agriculture in Turkey has developed much and we can see their agricultural products in all markets; it is most probable that agricultural insurance was one of the conditions which determined this development. Nevertheless it cannot be considered the main cause as Romania has a similar insurance system yet Romanian agricultural products don't reach the international market.

Governments should identify and address market impediments, to help farmers complement their risk management activities with potentially cost-effective financial tools such as insurance. One of the central arguments for government intervention in the provision, administration, and oversight of agricultural insurance program involves the presence of systemic risk (that is, risk that affects a large number of economic units, such as farmers and herders, simultaneously). The systemic component of agricultural risks can generate major losses in the portfolio of agricultural insurers. Public intervention would be justified because no private reinsurer or pool of reinsurers has the capacity to cover such a large liability when the risks, even though small, may be difficult to diversify.

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