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AGRICULTURAL INSURANCES IN ROMANIA: PRESENT AND FUTURE ASPECTS

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I. The existing background of agricultural insurances in Romania

The experience of economically developed countries revealed the fact that without a stable development of **agricultural insurances**, there is no chance for high performance agriculture.

The investment necessary for working the field by means of an intensive technology is too important to disconsider the climatic risks whose manifestation may ruine the entrepreneurs. The agricultural field of activity confronts with climatic risks which acquired lately a frequence and an intensity of manifestation unknown for us.

In our country, calamities produced in agriculture, such as the drought, the hail, very low temperatures (under the limit of biological stand for crops and large farms), rainstorms causing indirect effects: overflowings, flooding, landslides etc., are very known due to their wide broadcasting, but one may also mention the hazards produced by epizooties, such as the avian flu, the hog cholera, etc.

A world classification of the flooding risk was undertaken, taking into account the quantification of 26 variables, within it Romania occupied the 49th position[1]. According to the statistics, during the years 1960-2003, 1.923.000 hectares of agricultural surface were damaged by flood.

At the level of the specific market, the first subscribers for agricultural insurances in 2005 were up to less than 60 million RON, representing around 1,7% of the market portofolio.

During the agricultural year 2006-2007, although the offer made by the insurance companies is substantial[2], and the **subsidies granted by the state** for the payment of the annual premium increased from 20% to 50% of the premium value, a small number of farmers insure their investment for setting the crops. Practically, an overwhelming percentage of the first subscribers for crop and animal insurances represent the insurances undertaken by large farms.

Unfortunately, the great majority of small producers continue, for lack of money, to ignore the agricultural insurances. For this reason, even if the agricultural insurances concluded for agricultural surfaces have enlarged for the last few years, their number still remains reduced compared to the countries of Western Europe.

At present, around 20-25%[3] of the total agricultural area in Romania is covered by the insurance, even if the insurance premium for crops is supported by the government within certain circumstances. The proportion is very low

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[1] Source: Water Careful Management Laboratory, Hydrology and Water Careful Management National Institute – www.hidro.ro

[2] The market of agricultural insurances increased, at the end of the year 2006, to around 45,82 mil. EURO, its volume growing with 130% compared to the year 2005. Inspite all these facts, the professionals estimate that this industry is at the beginning of its development, which may be assessed to around 10-15% of the sound potential.
[3] Compared to the value of around 10-15% during the agricultural year 2005-2006.

compared to that of the Western Europe. In France over 60% of the agricultural area is insured, and in Germany it represents over 80%.

Natural calamities which have lately stroke Romania determined the insurance companies to believe that the coverage degree will significantly increase when speaking of agricultural insurances[4]. The reality controverted this prevision due to people's mentality: *"it won't happen to me"* which is strongly implanted and more powerful than the example of those who were affected by the released nature. In addition to it, autochthon farmers expect to be indemnified by the government when they loose their crop.

The situation in our country may be explained in the following way: the possible buyers of an insurance policy are used to underestimate the level of the risk, so the penetration degree of these insurances is upheld to a low level. Under the pressure generated by the population, as well as by electoral reasons, governments are often obliged to support the insured but also the uninsured persons before the manifestation of any natural calamities, using measures specific to the crisis management.

As a result of this situation, a particular conduct (charity hazard) was developped by the population characterized by the leaning belonging to the persons submitted to all kind of risks of rejecting to conclude an insurance or to use other means of financing of risks due to their anticipation of the aid offered by certain emergency governmental programs.

Starting with the agricultural year 2002/2003, in Romania, the agricultural insurances benefit from the effects of the *Law no. 381/2002*[5] concerning the granting of indemnities when dealing with natural calamities in agriculture, this measure was meant to provide an increased protection of the farmers, to support them financially in order to encourage them to protect their own patrimony assets by concluding an insurance.

At present, there is no harmful natural disaster in agriculture which can not be cover by certain types of insurance, the insured farmer is to be compensated either by the insurance company for *standard risks* or by the government for natural hazards *designed as „calamity"*.

Within the **standard risks** category, most of the insurance companies include:

a. *For the crop*: hail, rainstorms, storms, late frosts during the spring, early frosts during the autumn, cropped lands sliding and collapse, fire generated by natural causes;

b. *For animals, birds, bees and fish*: surgical, obstetrical and internal diseases; accidents produced by the acute distention of the abdomen, attack of wild animals, internal injuries caused by swallowing different objects, dystocia[6], fire, lightning, storm.

The government supports the premium of the following insurable risks: floods, drought, bogging, rainstorms and prolonged rains, breaking the dams, etc.

The farmer may choose to insure all the risks mentioned above or only a part of them, such as:

- Crop insurance;
- Animal insurance;
- Colony of bees insurance;
- Fowl insurance;
- Insurance of agricultural machines and tools damages;
- Optional insurance of accidents to pets.

According to the legislation, the *certification of insurance companies* licensed to conclude agricultural

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[4] This aspect mainly implies the need to inform the population, taking into account that the insurance penetration is proportional to the educational level.
[5] The law was published in the Official Gazette no. 442/24.06.2002 and modified according to the G.D. no. 7/2004 – O.G. no. 78/30.01.2004.

[6] Difficult labour to animals.

insurances, is made once a year[7] within the Ministry of Agriculture Forests and Rural Development and within the Insurance Surveillance Commission.

Crops, animal and bird species and families of bees and fish deliberately foreseen by the law, presenting **subsidies of the premium** when dealing with natural calamities, are as it follows:

1. *for crops* one may mention: autumn wheat for consumption and seed; sun-flower for consumption and seed; soybean; sugar beet; noble vine cultures; intensive orchards.
2. *animals*: bovine species.

The limit term for signing the insurance policies, under the circumstances of governmental aids applied to the insurance premiums, is the 15th of December for all the sowing tasks taking place in autumn and on the 31st of May for all the sowing tasks taking place in spring and for large farms. For other cases, the insurance policy may be concluded every month of the year, but 30 days before the harvest of the insured crop.

In order to conclude an agricultural insurance, a farmer has the obligation of proving the fact that the animals and the crops constituting his estate correspond to the technological standards of maintenance, there should be no doubt for their health state and for the anticipation of a planned production.

An insurance policy is considered concluded after the fulfillment of a risk inspection, of an insurance statement by types of crops and after the payment of an insurance premium. The insured farms set out from 0.5 hectares and may reach over 1.000 hectares, and the agricultural insurance policies cover

the expenses resulting from agricultural activities such as the ploughing, the sowing, from the seed purchase or it may cover the production value.

To take an example, for an area of 100 hectares sowed with wheat and sunflower, the average insurance premium per hectare against risks such as hail, fire, direct effects of rainstorms, storm/hurricane, land collapse/sliding, early frost is 22 lei/hectare.

The insurance premiums vary according to the risk category that characterize the geographical area (the frequency of manifestation of insured events specific to a certain area is very important). The insured sum is chosen by the farmer, it may concur with the planned level for the expenses directly involved in production until the harvest, with the planned level of the production value or with a middle value. Thus, for an area cropped with vegetables insured for a sum set to 8.000 lei/hectare, the annual premium will be of 192 lei/hectare. For one hectare of wheat in non irrigated system, the insured sum may reach the value of 1.200 RON, for consumer vegetables its value is of 7.000 lei/hectare and for the noble vine culture it is of 6.000 lei/hectare.

As for the zootechnical sector, the insured sum represents the purchase value, the stock-taking value or the market value of animals. For example, the insured sum for a cow during the period of lactation is around 3.000 lei, in the case of 50 sheep for the insured sum of 15.000 lei, the annual premium will have the value of 900 lei.

It should be known that all the fowl affected by the avian flu are not on the list of agricultural insurances, the indemnity in this case is granted by the government, according to the international law of epizooties.

However, we should mention that the purpose of the insurance is not to cover totally the loss generated by these events, but to mutualise the risks. The insurance industry is not capable to reduce by itself all the risks produced by climatic changes, but it can have a crucial

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[7] MAFRD Decree no. 765/20.11.2006 concerning the approval of the List of insurance and insurance-re-insurance companies which conclude insurances for crops, animals, birds, families of bees and fish accredited by the Ministry of Agriculture, Forests and Rural Development, for the agricultural year 2006-2007, completed by the MAFRD Decree no. 70/2007 and MAFRD Decree 218/2007, which enlist a number of 13 companies.

contribution in understanding, assessing and preventing these risks and in the choice of the right policy for each type of hazard.

Although the number of insured animals (bovines) and insured surfaces is rather reduced, at the internal level, compared to the number registered by the European states, the sums granted by the government to the farmers, as indemnity, were considerable. For example, in 2005, the Ministry of Agriculture paid to the insured farmers indemnities representing the amount of 24.9 million euros. For this reason, the government searches solutions in order to contribute to the compensation of the damages and not to be the only payer.

Until this issue is solved, in order to stimulate the farmers to insure their crops, the Ministry of Agriculture allocated 30 million lei from the state budget, in order to support the agricultural insurance premiums with 50%, for the year 2007.

II. Risk typology in agriculture

The daily activity involves a series of risks that farmers have to deal with, so they need to be cover against these risks by concluding an agricultural insurance. This variety of risks includes those generated by nature and by people.

Table no.1 – *Typology of Agricultural Risk*

Category of risk	Manifestation forms
Climatic	Hail, frost, drought, flood, wind, fire, snow, ice etc.
Biological	Plagues, diseases etc.
Geological	earthquakes, earth-flow, volcanic eruptions etc.
Market	Domestic and international price variability and changes in quality standards etc.
Man-made	War, financial crisis, collapse of legal institutions etc.

Certain agricultural risks may not be controlled or influenced by the farmer's actions (natural disasters, international financial crisis, etc.), other risks are totally or only partially controllable (flow variation of water courses, diseases, insect invasion etc.).

The manifestation of these events is not always predictable thus the farmers are not prepared to manage the risks. From this perspective the benefits resulting from agricultural insurances are incontestable.

The risk can be managed before or after the manifestation of the hazard. Thus one may identify two main approaches: the diminution or the attenuation of risk effects (ex ante) and the previous control of the risk (ex post).

Risk diminution is achieved by means of the income diversification, for example other sources of obtaining incomes, meaning other activities, different from the agriculture (or the use of personal savings), the migration towards other agricultural areas presenting a lower risk degree, the investment in high technology which can be less affected by the manifestation of certain risks such as the high performance irrigation systems or the use of strong seeds resistant to certain attacks generated by specific pests.

The applied strategies for the previous control of the risk may consider the activities of identification of events and the responsibility of the persons involved in the production of certain types of risks.

From this perspective a special importance is given to the classification of

agricultural risks in systemic risks[8] (basic) and syncretic risks[9] (particular or specific).

The systemic risk affects an entire surface (an area) or a group of people in a collective way (entirely), the examples here include the war, the starvation periods, earthquakes, extended pollution, the unemployment etc.

In agriculture, the systemic risk is produced when a group of farmers experience a certain hazard at the same time. This type of risk may be insured in the traditional way and can not be avoided or diminished by the diversification of the production. Its effects are so complex that they exceed the purposes as well as the coverage potency of private insurances. Considered as a whole, as social issues, the responsability imposed by this risk, is taken in charge by the governments in most of the cases.

The syncretic risk affects surfaces, sectors or individuals in a heterogeneous way, meaning that a person or a certain geographical area is affected in a different way than the others. The syncretic risk may be attenuated by means of the diversification process (for example, the possession of the agricultural surface and the setting up of crops in different geographical areas, the harvest diversification etc.).

In agriculture, the systemic risk is characterized by the previous presence of the risk of correlated variables (covariance risk[10]).

The "domino effect" is characteristic to the covariance risk – it refers to a small change which will cause a similar change nearby, which then will cause another similar change, and so on in linear sequence, by analogy to a falling row of dominoes standing on end, it also relates to a chain of events - (when a farmer is struck by a hazard, the others following him will be affected too).

The chain effect relation may be encountered at macroeconomic level. If the agricultural sector is strongly affected by natural causes or other causes generated by people, then we may speak of damages produced within the sectors close related to it.

The designation of a risk as being systemic or syncretic may be influenced by various factors. For example, as a result of the incapacity of most of the individuals to control their social environment, we may observe their choice to migrate towards areas more favorable to the undertaken activity.

Thus, a large number of individuals choose to live within areas, homogenous from the geographical, ecological and agricultural standpoint, suitable to offer them more opportunities. The risks affecting the individuals characteristic to these areas are often more systemic than syncretic.

Natural perils may be both systemic and syncretic. For example, an earthquake may constitute a systemic risk for all households (families) within a specific community living near a seismic fault. Though, a comparison between damages abode by communities living near or far from the epicenter may reveal the syncretic character of the risk.

In conclusion, we may remark the farmers' ability in maintaining or even obtaining additional incomes from agricultural activities, fact that depends on the efficiency of strategies used for managing the risk and on their degree of adjusting to the risk typology.

The more important is the systemic risk, the less significant is the possibility that a farmer could be able to manage the risk in an efficient and independent way, by using unofficial mechanisms (such as loans between the members of the family, neighbours and friends, this is the case of individual farmers in Romania who still register an important influence).

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[8] Systemic risk.
[9] Idiosyncretic risk or unsystematic risk.
[10] Covariate risk.

III. Limits of the classical agricultural insurance

„*The collaboration between public authorities and the insurance industry is necessary for the implementation and the operation of a protection strategy for insuring against disasters*", represents one of the conclusions formulated by ICAR Forum 2006[11]. The implementation of strategies of managing natural disasters leads to the diminution of the total cost allocated to damages. But, most of the time, it is impossible to implement similar strategies in different countries.[12] In this situation, the political will is determined within each country, different targets being followed.

In Romania, especially during the development process existing at present in agriculture, the public-private relationship is still absolutely necessary due to the failure proved by small farmers in dealing with multiple issues (the partitioning of fields, the lack of equipments and of a suitable infrastructure, new European rules, climatic changes generating effects which become more and more disastrous etc.). A long term and serious involvement of the government may cause negative consequences.

The governmental involvement on any market presents the possibility to exclude the particular sector. For this reason, the agricultural insurance market does not constitute an exception.

The governmental aid in managing the risk in agriculture is materialized in the support allocated to the insurance premiums for certain categories of policies and risks and in the financial and material aid previous to the manifestation of risks considered disasters.

The damages alloted by the government are received only by those who have already concluded an insurance, even the utmost simple one, such as the insurance against the hail – it is the cheapest one. Then, the authorities are forced to declare by Government Decree, (according to the existing pseudopolitical interest) as a "calamity-stricken area" any surface affected by nature caprices, because of the large sums of money paid in this purpose. Such a conduct leads to an uneven environment, where the private insurers' interest decreases gradually, in a proportional manner to the lack of interest proved by possible customers of private insurances.

Private insurance companies may be no longer interested in making an offer of agricultural insurance if the rules of the game are not known from the beginning.

It is necessary to be informed upon the previous establishment of the intervention level (of the sum) to which the government interferes in order to offer assistance. If the governmental acts and decisions are clear and transparent, the insurance providers will prove much trust working on the agricultural market.

One may conclude that the governmental involvement in managing the risk within the agricultural sector explains the possibility of dealing with an increased risk affecting the producers' activity.[13] Generally, farmers should not count on the aid offered when dealing with a disaster, as long as they are not applying all the measures meant to control the risk.

An important way in the evolution of the agricultural insurance system, as it is shown by the experience of economic developed countries, is to combine the classical type of insurance with the deriving products.

The traditional agricultural insurance which may be multi-risk (it considers a variety of risks) or uni-risk (it

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[11] The International Catastrophic Risks Forum, 3rd edition, held at Bucharest on 2nd -3rd of October 2006.
[12] As Alberto MONTI, Principal Administrator (Insurance), Financial Affairs Division, EOCD (European Organisation for Cooperation and Development) mentioned in his presentation held within ICAR Forum 2006.

[13] Mahul, Olivier - "Optimal Insurance against Climatic Experience." *American Journal of Agricultural Economics* 83(3), 2001, p. 593–604.

refers to the manifestation of one single risk), presents a series of limitations, that is why it is more and more avoided by the possible customers. The main limits of the classical agricultural insurance may be:

- *informational asymmetry* – successful insurance programs need to provide to the insurer the adequate information (suitable, sufficient information) regarding the nature of the risk to be insured. It is a difficult task for the insurers because the farmers will always possess more information related to their possible output than any expert working for the insurance company;
- *denatured stimulation* – insurers are informed upon the fact that the government will automatically cover the largest part of the loss in agriculture, thus the motivation for a correct approach is reduced. The insurers may conclude unfair or just on the line of the law agreements with farmers in order to obtain increased or false claims;
- *unfavorable (adverse) selection*– there is the possibility that private insurance companies focus especially on "good" risks, thus "damaging" risks remain uncovered, becoming the responsibility of the government, this possibility is generated by the involvement of the public sector;
- *administrative costs* – poor (incomplete) information regarding the farm implies larger costs to carry out risk inspections;
- *moral hazard* - All risks determined by people's conduct represent moral hazards. The attention degree, the honesty or the educational level of the insured person (and there are other aspects) may influence the moral hazard assumed by the insurer. For example, it may result insured person staging fire to his own crop in order to claim an indemnity for fire etc.

IV. New types of agricultural insurances

During the last few years, at the international level, a variety of new financial mechanisms present the capacity of solving many issues related to the traditional projection of agricultural insurances. New instruments operate based on the configuration of the insurance indemnity payment, thus it will be paid when it reaches a certain level determined by statistic calculations and designed as the "index".

The international practice registers two types of agricultural insurances based on the index: weather insurance depending on the index and surface insurance depending on the index.

The use of the two types of policies for the insurance against natural disasters intensified the access to insurance services for the poor persons living to the country. The "release mechanism" (the index) may be verified in an independent manner, thus the vulnerability to political interaction and the manipulation of the loss registered by farms reduce. Reduced administrative and transactional costs together with other profits force the private sector of agricultural insurances to offer to possible customers' unsignificant subsidies or no subsidies.

I. Weather insurance based index – the insurance indemnity will be paid by the insurer under the circumstances of reaching a release mechanism previously established, called the "index".

The index may consist of a variety of weather indicators, such as: rainstorms volume, temperature, humidity, wind intensity or the number of sunny days, each indicator is confirmed by a independent third person and mutually related to individual damages registered as a result of the event manifestation.

II. Surface insurance depending on the index – the payment of the indemnity is completed when the cropped surface is reduced (the output too) under a certain percentage determined according to climatic characteristics of the area, as a result of the manifestation of a disaster (drought, flood etc.).

The insurance is sold using standard devices (for example, currency units or "units") corresponding to a policy or to a certificate for each bought unit. The insurance premium is the same for each buyer, providing an equal indemnity if the insured event takes place. Buyers are free to purchase as many insurance units as they want.

III. A weather derivative represent a contract between two parties which stipulates the value of the payment taking into account meteorological conditions manifested during the period of the contract.

There are two commonly used forms of weather derivatives: call and put.

A. "Call" contracts imply the existence of a buyer and of a seller who agree over the period of the contract and over a weather index (W) considered the main element of the contract. For example, the W may be the total amount of rain-fall during the entire period of the contract.

From the beginning, the seller receives a premium from the buyer. At the end of the contract, if the W is more important than the planned step sensitivity (S), the seller is obliged to pay to the buyer a sum $P = k(W - S)$, where k is the predetermined constant factor which sets the value of the payment according the weather index unit. The step sensitivity (S) and the k factor are known as the "stike" (the approved price previously determined or the exercise price) and the "tick" (the minimum fluctuation of price) of the contract. The payment planification of the sum (P) may be dual or linear (the fixed sum, established in the contract - P_0 – will be paid if the W is more important than the S, if this condition is not fulfilled

then the payment does no longer take place) .

B. "Put" derivatives are similar to "call" products except the fact when the seller pays to the buyers the sum P if the W is lower than the S. This sum is determined considering the following formula $P = k(S - W)$. "Call" or "put" products represent the equivalent of an insurance policy: the buyer pays a premium and receives the indemnity pledge in exchange, if a previous defined condition is accomplished.

A generic weather derivative contract can be formulated by specifying the following seven parameters:
- contract type (call or put);
- contract period (e.g., from 1 Nov 2006 to 31 May 2007);
- an official weather station from which the meteorological record is obtained;
- definition of weather index (*W*) underlying the contract;
- strike (*S*);
- tick (*k*) or constant payment (*PO*) for a linear or binary payment scheme;
- premium.

The parameters mentioned above determine the payment sum (P) for a linear payment planification:

$$P_{put} = k \max(S - W) \text{ where } (S - W)$$
is at least 0
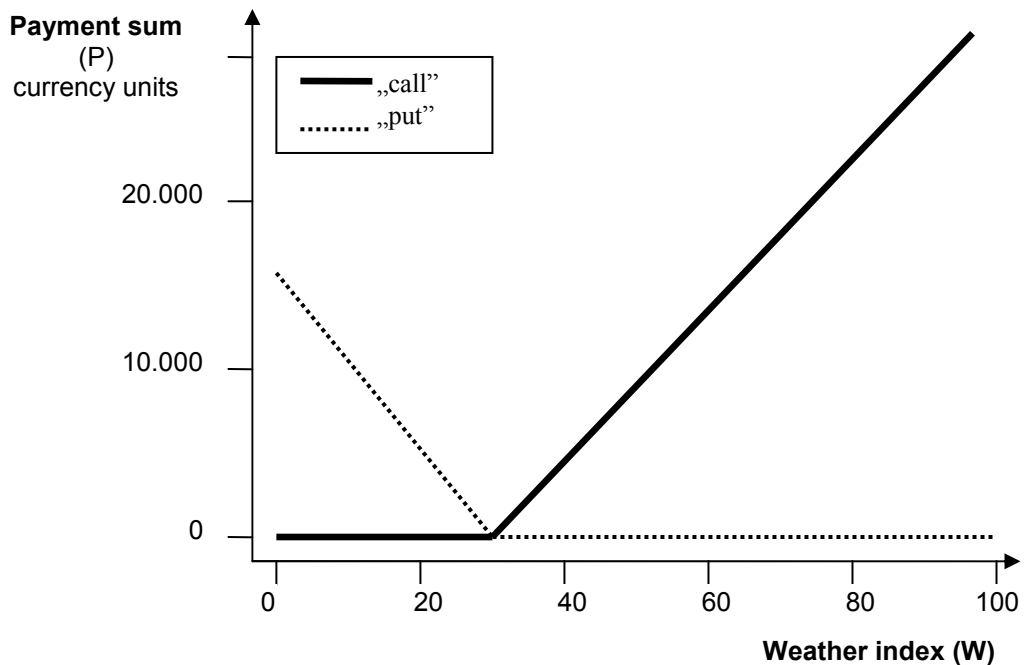
$$P_{call} = k \max(W - S) \text{ where } (W - S)$$
is at least 0

The function max(*x, y*) returns the greater of values *x (S)* or *y (W)*.

For a binary payment scheme:

$P_{put} = P_0$ if $W - S < 0$; $P_{put} = 0$ if $W - S \geq 0$

$P_{call} = P_0$ if $W - S > 0$; $P_{call} = 0$ if $W - S \leq 0$

The payment diagrams for a linear "call" and "put" contracts are presented as it follows:

Figure no.1 – *The payment diagrams for a linear "call" and "put" contracts*

REFERENCES	
Mahul O.	*Optimal Insurance against Climatic Experience*, American Journal of Agricultural Economics 83(3), 2001.
Miranda M., Vedenov D.	*Innovations in Agricultural and Natural Disaster Insurance*, American Journal of Agricultural Economics 83(3), 2001
Mitu N. E.	*Asigurări şi reasigurări,* Ed. Universitaria, Craiova, 2005.
Popescu J., Cristea M.	*Asigurări şi reasigurări – Teorie şi practică,* Ed. Universitaria, Craiova, 2003.
Zorrilla J.L.	*Extensive Herbaceous Cultivation and Cattle Risks: Possibilities that Agricultural Insurance Offers for their Management*, Paper presented at the international conference on Agricultural Insurance and Income Guarantee, Madrid,13 May, 2002.