The Importance of the Index Insurance for the Development of Agricultural Insurance in Georgia

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Abstract

Agricultural sector, unlike other sectors of the economy, is distinguished by specific risk factors, which largely depends on natural climatic conditions and the ongoing global meteorological changes. Insurance is the financial mechanism, with its considerable contribution to the country's social and economic stability. The insurance sector's prospects and problems today are vital issues for the agriculture as well as for the economy and employment. In case of Georgia, the development direction and the situation was not so successful, until 2014, the share of agricultural insurance in the insurance sector did not exceed 1%.

The article discusses the importance of the index insurance for the development of agricultural insurance and the need for Government Support in its promotion. The prospects and problems of agro-insurance development have been identified on the basis of comparative analysis of the insurance policies and compensation claims, regional distribution and dynamics of recent years in Georgia. Also, based on theoretical and practical analysis the essential recommendations have been designed to eliminate them and to promote development of the agriculture insurance. As well as, an attention is paid to the inclusion and use of the type of index insurance in the Georgian agricultural insurance sector.

Keywords: Agribusiness, Insurance, Index Insurance, Georgia

Introduction

The situation in the agricultural sector and the economic situation of the farmers involved in it are constantly changing for some important reasons. In the agricultural sector, there are several strategies for risk management: 1) Strategies for carrying out activities within the farm - **on-farm measures** (diversification of production), for instance, the introduction of appropriate or latest technologies of production, investment in irrigation systems, etc. Similarly, vertical integration is a method of minimizing the

risk factor of price changes. The third option to consider is stabilization reports (so-called reserves) for self-insurance, which the farmers periodically maintain according to certain percentage of income. **2) Risk sharing strategies,** such as marketing and production contracts, hijacking on the futures market or participation in mutual funds and insurance **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**.

Insurance is the most famous risk sharing instrument. In order to carry out risk insurance, it has to be performed simultaneously two conditions - it should be possible to mitigate side effects of "asymmetric information" and, also, must be overcome "systemic risk". Čolović Vladimir and Petrović Nataša Mrvić Agree and give the opinion of Markovic T. and Jovanovic M. that the insurance is the best tool for the risk management, which represents guarantees and stability factors for any production **(Čolović & Petrović, 2014)**. Natural disasters and epizootic diseases are a big problem for an insurance company. In the absence of reinsurance or state guarantees to insure natural and systemic risks it is linked to high premiums by the insurance companies. Most of the farmers can not afford to repay it, as well as the insurer to reserve a large amount of capital to maintain the solvency. This means by itself, to form a comprehensive agricultural insurance scheme it is necessary to support the private sector by state structures at a legislative and fiscal level. However, if the govornment provides unscheduled payments to cover claims caused by natural disasters will negatively affect the development of agro-insurance products.

Main Types of Agro Insurance

Čolović and Petrović In their work have cited Manić's opinion that the insurance products developed for the agricultural sector can be divided into several groups in accordance with compensation methods. These methods are as follows: **1)** payment of the sum insured is made in accordance with the damage inflicted; **2)** payment of the sum insured is measured by the index; **3)** payment of the sum insured is determined based on realized yields and product prices. The insurance features are fundamentally different in the crop production and livestock sector **(Čolović & Petrović, 2014)**.

The crop insurance

One of the most common types of insurance in this direction is **single risk insurance** which covers against one peril or risk, or even two but of a non-systemic nature (most often hail, or hail and fire) **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**. Some insurance policies cover together the risks of different meteorological phenomenas, the service offered in this way represents a **combined risk insurance.** Their types also

should be considered: **1)** Yield insurance - guarantees the main risks affecting production. **2)** Whole-farm insurance - combination of guarantees for the different agricultural products on a farm**; 3)** Price insurance - covers an insured amount of production against price decreas below a certain threshold; **4)** Revenue insurance - combines yield and price risks coverage **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**; **5)** Index insurance. Let's overlook the last one.

- **Index insurance** - Is based on a specific calculation of the index assigned to the insured teritory or region. Several types of insurance may be distinguished: 1) Combined insurance for territories and yields - provides compensation for the farmer for a particular area or a statistically calculated annual harvest indicator for the administrative unit **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**; 2) Combined insurance of the territories and income - is based on the multiplication of the given area on the price scale. If within a certain period the average yield/income for a given area will be low level for a certain margin, farmers who carry out their activities in the given area and have insured a specific culture should be subjected for full compensation of loss; 3) Indirect index insurance - does not provide a medium yield or a price scale according to a specific area or region. For insurance coverage to determine riskiness, meteorological indicators and a satellite images are defined.

Creation of the map and agro-meteorological model according to the risks is an important tool for the preliminary determination of risks and the minimization of expected losses. It is possible to divide the regions of the country according to the frequency of occurrence natural disasters. This model is based on the relationship between physiological data of specific culture, soil mapping and climate change indicators. The datas of climate change observations are collected over the years and are summarized.

In order to determine the development of agro-insurance in the country we can outline several indicators: 1) The share of agro-insurance in the entire insurance sector - penetration rate; 2) Loss ratio; 3) Premium rates; 4) Level of subsidies; 5) Other technicalities.

The difference between the countries is quite large according to the share of agro insurance in the entire insurance sector, but only this penetration rate is not the best indicator for assessing the level of agricultural development. Significant indicator can be outlined in this regard as crop insurance type, because in most cases the majority of insurance policies are only single risk insurance policy.

The tariff rate is a percentage of the sum insured that is paid by the police holder when purchasing the insurance policy. This rate is quite variable by countries. According to the Agricultural Insurance Schemes - Summary report **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**

there are several factors influencing the determination of this rate: 1) The frequency of risk occurrence according to time and territory; 2) risk type (hail, drought) and the number of risks covered by the insurance policy; 3) sensitivity of the crop; 4) Number of insured farms; 5) The presence of a franchise in the insurance policy.

The loss ratio is an indicator between the paid compensations by insurer and the premiums paid by the police holders. For healthy and profitable activities of the insurance company, this indicator should be less than 1 (100%) to enable the company to cover the acquisition and administrative expenses. On average, for agro-insurance the loss ratio varies in the middle of the range 60-75%, except for some exceptions. For example, according to the Agricultural Insurance Schemes - Summary report **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)** the figure in Cyprus was 95% before 2005, while in Slovenia it was - 148%. In the conditions of high ratio of indicators reinsurance and promotion programs of the state are vital.

The other formal technicalities can be outlined: reinsurance, limits and franchise, bonus/malus system, compulsory insurance, mechanism for remuneration. In most countries, the reinsurance of the insurance policy is carried out by private companies, but the exception is Portugal, where reinsurance is carried out by the public sector **(Bielza, Conte, Dittmann, Gallego & Stroblmair, 2006)**.

As for what is the role of insurance in agriculture: the one of the main factors is the function of the stabilizer of income for peasants or farmers. The second most important function is the availability of the loan. Microfinance Organization or Bank that grants agro credit must be sure that this loan will be returned. Since the borrower's only income is to sell agro products, if he could not produce these products and sell, he will not be able to repay the loan. Therefore, if the farmer presents the agro-insurance to the financial institute, easily gets a loan.

It also should be noted that the insurance company, which is interested in to have as less as possible a few insurance cases, ie, potential loss forces the farmers to use modern and most efficient technologies which minimize the risk of losses. In the end, this will serve and be helpful for the farmers and the economy in general. As for the level of knowledge, it is very low - the farmer does not have the proper knowledge, even knowing what it is productivity, how is fertilizer applied to the ground, how the land is resting and what will come after different types of cultivation - all these problems in complex creates that, in many cases, the agro sector is the means of self-sustaining and not the business in Georgia.

Insurance in Georgia

In Georgia, nearly 85 percent of the land is owned by small farmers who do not produce even accounting, at the same time relatively large farms due to high cost of insurance do not insure the harvest. Therefore in September 2014, the Ministry of Agriculture developed and implemented agro insurance project, which currently subsidizes insurance premiums 70 - 80% within (according to Agro Insurance Program - Decree # 524 of the Government of Georgia on March 28, 2016). Until 2014 only a few insurance companies were offering agricultural insurance products to farmers and the agricultural insurance penetration rate in the insurance sector was too low (less than 1%). In such situation the state must assist the insurer in collecting statistical data, which is necessary for the agro insurance business: land mapping, description of natural phenomena and statistical analysis, regional harvest statistics, price statistics, etc.

In 2012, Insurance Company Aldagi Bci became an owner 85% of the shares of the insurance company Imedi L. Imedi L had already implemented agro-credit insurance for more than 10 years. The company's approach meant that the company insured all the cultures that come to this land and are typical for this land. For example, banana insurance was not the company's interest.

In 2014 the agricultural insurance pilot program was initiated by the Ministry of Agriculture. Program compensates the damage caused by hail, excessive rainfall, hurricanes and the autumn frost. In the first year of the project budget was 5 million GEL. Co-financing maximum amount of insurance premium is 30 000 GEL, in the case of agricultural cooperatives - 50 000 GEL (http://eugeorgia.info/ka/article/107/agrodazgvevis-saxelmwifo-programashi-5-sadazgvevo-kompania-chaerto/). Within the framework of the program, land is insured only with Extract of the Public Registry indicating the cadastral code of the land, land drawings and GPS coordinates. More than 21,000 Policies have been issued in 2014 within the program, 34 different cultures worth more than 150 million GEL were insured on the 19 thousand hectare land area.

In 2016 several changes were made in the project. Since 2016 minimum and maximum insurance tariffs have been identified. For example tariffs for: 1) grain cultures - increased from 8% to 8.50% 2) leguminous crops - decreased from 8% to 7.20%; 3) vegetable crops - decreased from 12% to 11%; 4) citrus - remained unchanged at 11% and others. Also, from this year have been improved and adjusted insurance compensation and deductions for a franchise (unpaid minimum) to customer requirements (http://apma.ge/newsletter/projects/read/agroinsurance).

In 2014 29,514 plots (with 18,498 hectares) were covered by insurance project and totally 12,409,225 Gel premiums were payed, out of

which 11,637,013 Gel was subsidized by the state, the insurers have paid 18,498 Gel. The largest amount insured by land area was citrus cultures - 12,391 hectares and by payed premiums leading culture was vine with total 5,376,636 Gel premium. As for the territorial distribution, the largest number of insured land plots were located in Kakheti 9,863 plots, the lowest - 1 plot in Tbilisi. During 2014 damage was caused by natural disaster - hail in Guria and Adjara districts, total loss amounted to 1,879,298 GEL (6,879 insurance claims)

Cumulatively, in 2014-2015 under the project were covered 40,013 land plots (with 23,667 hectares of land area) (Source: Association of Georgian Insurance Companies). It should be taken into account that in 2015 was made an amendment in the project according to which the state subsidy share in insurance premium decreased from 90% to 60%. As a result, it caused 64% decrease of insured land number in 2015 comparison with the indicator for 2014.

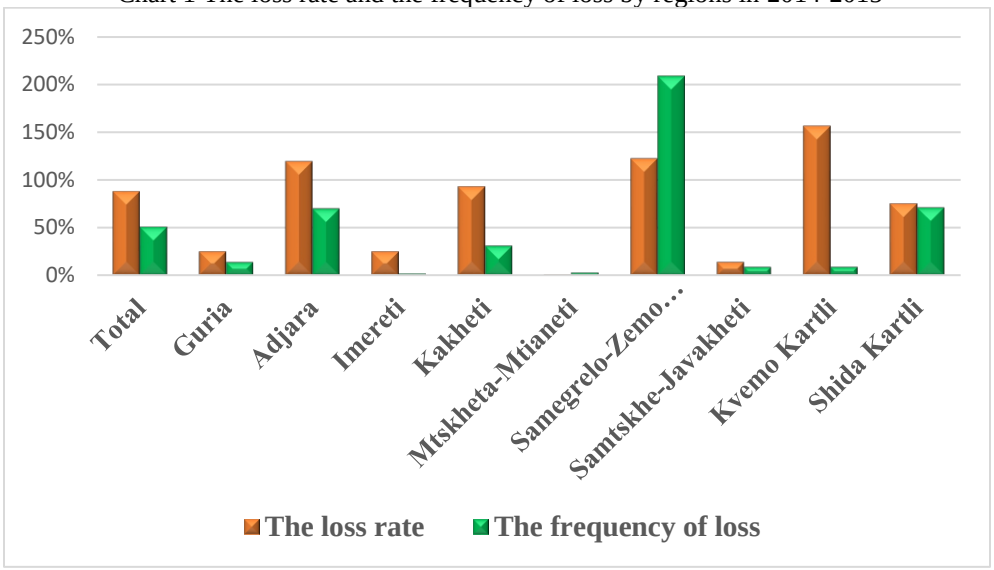
The premiums accumulated by insurance companies during the given two years amounted to 16,031,039 Gel. In 2015 the indicator was defined by 3,621,814 GEL, 71% less than the 2014 results. As for the paid claims, the total amount was 14,178,445 GEL (20,026 claims number) in two years. The loss ratios was 88%, while the frequency of loss - 51%. According to the insured risks, the most cases were caused by hail - 15,334, with total paid claims 13,414,317 GEL. We should pay attention to the issue of risk separation by regions. The most risky in this regard was Svaneti (Mestia, Lentekhi, etc) region. The loss ratio in Svaneti reached 122% and the frequency of loss - 208%, while in Mtskheta-Mtianeti (Tbilisi, etc) loss ratio was – 1% and the frequency of loss - 3%. If we glimpse the frequency of natural phenomena by regions (**see Chart 1 & Chart 2**) we will see that Samegrelo-Zemo Svaneti is the most risky region.

Table 1 Percentage Distribution of Natural Hydrometeorological Events Registered on the territory of Georgia in 1995-2012 and number of claims during 2014-2015

Natural desaster	Amount paid claims (Gel) during 2014-2015	Number of claims during 2014-2015	Percentage Distribution of Natural Hydrometeorological Events Registered on the territory of Georgia in 1995-2012
hail	13,414,317	15,334	31%
Hurricane	392,609	4,498	12%
Excess sediment	344,757	152	32%
Other	26,762	42	25%

Source: National Environmental Agency and Association of Georgian Insurance Companies

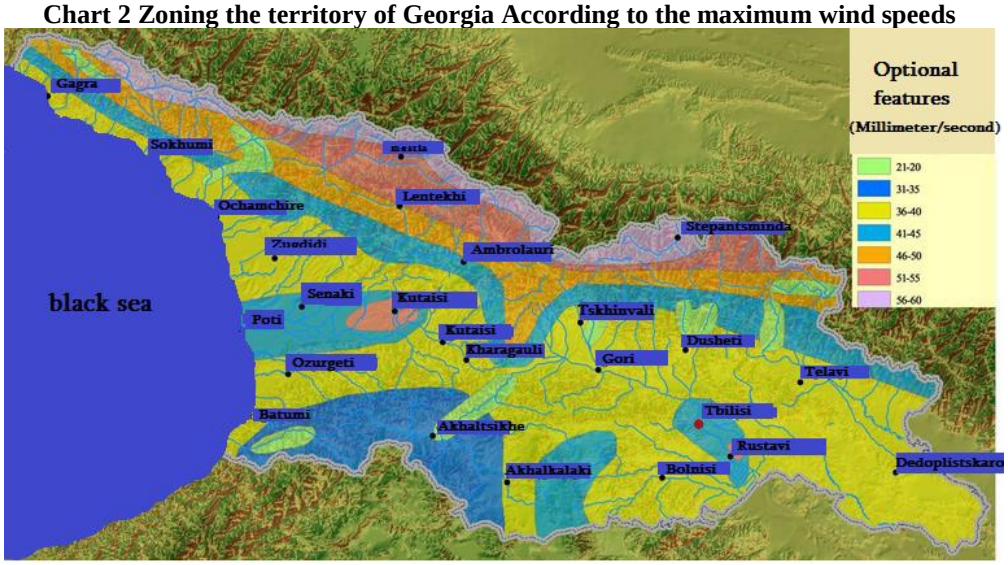
Chart 1 The loss rate and the frequency of loss by regions in 2014-2015



Source: Association of Georgian Insurance Companies

The share (penetration rate) of agri-insurance in the entire insurance sector over the last two years is as follows: 2014 - 4.1%, which is a good indicator on the background of 1% of the previous periods. In 2015 - it represents still 1%. The indicator shows that farmers are not ready to insure the harvest, which, on the one hand, is due to financial support problems and low level of insurance culture and, on the other hand, cause of distrust towards insurance companies.

Chart 2 Zoning the territory of Georgia According to the maximum wind speeds



Source: National Environmental Agency

Hail comes to the whole territory of the country. Its intensity and frequency are especially high in eastern Georgia. Annually, there are 5 to 15 accident of this disaster and the destroyed agricultural lands are from 0.7 to 8.0%. In the last 10 years, the damage inflicted by the hail to the country is more than 130 million Gel (Source: National Environmental Agency). Strong and long storm is observed throughout the country. Their frequency and intensity are especially high in Eastern Georgia and Imereti regions. The frequency of recurrence of these events has increased 2 times and is repeated in every 4-5 years. Strong hurricanes make special damages to agricultural lands. In 1995-2008 the damage inflicted to the country from this disaster reached 90 mln Gel (Source: National Environmental Agency).

In addition, we should also consider productivity, recently the output of one-year crops (maize, potatoes, except wheat) and the size of the cultivated land area have significantly decreased. In perennial crops (fruits, citruses, except for grapes), the same decline is observed. This aspect indicates a truly unfavorable trend for agriculture and agro-insurance in Georgia.

Drought is not insured within the program, but considering it as a significant risk factor, it is necessary to be taken into account. The drought is observed on the whole territory of the country. In the early periods, the drought was once in every 15-20 years, in the recent period it occurs every 6-7 years. In 1995-2008 the damage inflicted by drought on agriculture reached up to 400 mln Gel. In terms of rainfall, Georgia is a contrasting region. In Guria-Adjara and Kolkheti lowland rainfall is more than 1000 mm per year. In other regions the sediments are less than 300-750 mm (Source: National Environmental Agency). That is why the problem of desertification, the main cause of the drought is actual for Georgia and of course, it is essential that the risk factor should be involved in the insurance program.

Conclusion

Based on the analysis and compilation of the above, we can conclude:

1. There is a lot of work to be done in marketing by insurance companies. Also, an educational work is not only the prerogative of insurance companies, but also the effective measures of the government should be strengthened. Trend is observed in the insurance market to operate with only a few types of products. It is necessary to analyze the needs of consumers and take into consideration further refining the product or offer a new one. In connection with agro insurance, they can also share western experience, even in terms of novelty: Index insurance is an innovation offered on the insurance market based on price and aggregate calculations for the index assigned to the particular region. This insurance product includes, as well as satellite mapping, determining the meteorological risks

of regions that characterizes particular regions and granting them the relevant index. This product allows to differentiate the pricing scale according to the risk level for each region. For example, if we look at the frequency and loss ratio of the claims by the agri-insurance policies issued in 2014-2015, according to the regions, we should note that total loss ratio amounted to 88%, the frequency of loss - 51%, but according to separate regions, Samegrelo-Zemo Svaneti was distinguished with 122% and 208% of the losses and frequency rates when the similar indicators of Mtskheta-Mtianeti were equal to 1% and 3%. To create a complete picture of risk factors for natural disasters and predicting them, it is necessary to establish permanent and sustainable cooperation with the National Environmental Agency, which predicts the country's natural hydro meteorological and geodynamic processes and events. In cooperation according to insurance risk factors mapping can be done for retrospective and forecast analysis. It will be welcomed to form an information platform for agro insurance, which will unify the information received from the contractors engaged in the system and provide the information materials required for the analysis from the stakeholders;

2. For the agro insurance it has great importance to determine exact coordinates of insured land plot. For this several methods are used: Extract of the Public Registry indicating the cadastral code of the land, land drawings and GPS coordinates. In Georgia lack of land plots registered in the Public Registry makes it is necessary to use the GPS coordinates recording system when insuring. The formatting of these coordinates data is available in different ways: **Degrees, minutes, and seconds (DMS) - 41°24’12.2″N 2°10’26.5″E, 2) Degrees and decimal minutes (DMM) - 41 24.2028, 2 10.4418; 3) Decimal degrees (DD) - 41.40338, 2.17403.** Using a different system of coordinate formatting and putting into one particular platform/system, which is customized to another particular format determines the incorrect final coordinates. As a result, the insurance company has insured a different land from the land plot specified in the policy. In such cases in the accounting program for policies an automatic transmission mode can be built in, which will transfer the exact information and the map from the Google Map about insured land areas according to the GPS coordinates;

3. The physiological and vegetative picture of the plant growth differs by the climatic zones, So that cultural plants should be distinguished by climatic zones, which are related to the specific zone (Georgia is characterized by 11 climatic zones from 14 climatic zones worldwide). Also, must be defined favorable soil type (in Georgia there are 49 soil types) and region of land for specific crops. This gives the opportunity to reduce the risks of climatic conditions and to encourage more growth in relation to

specific crops. Enrollment of existing nuances in insurance policy allows to reduce the cost of insurance policy according to certain risk factors;

4. The wrong assessment of the risks. In this respect there is a lot to be done by companies and the government itself. The function of the government in this case requires setting up high standards of education and promotion and licensing of high level specialists in insurance and actuarial activities.

In conclusion it can be said, that there is still much to be done in order to minimize the factors and risks associated with the development of agro-insurance in Georgia. If the relevant legislative-regulatory activity has not been started, it is possible that this process can not give the expected positive results and all efforts could be in vain.

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