

AGRICULTURAL INSURANCE IN ESTONIA – CURRENT SITUATION AND FARMERS' WILLINGNESS TO USE CROP INSURANCE

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Abstract

Farmers are strongly exposed to agricultural risks and have to adapt their strategies to the new uncertainties resulting from the changes in the EU agricultural policy. So far, risk sharing strategies in the context of production risk management have received little attention in Estonia. The aim of the paper is to examine the current availability of agricultural insurance in Estonia and the farmers' attitudes towards insurance as a risk management tool. The analysis is based on a farm survey conducted in 2015. At first, an overview on available insurance products is given. Secondly, farmers' interest towards insurance and the connection between farm characteristics and the interest, is studied. The results show that availability of agricultural risk management instruments is limited in Estonia. Agricultural insurance includes protection against livestock production risks provided by two insurance companies, and there are no instruments for crop insurance available. The results of farm survey show that farmers' interest towards crop-yield and crop income insurance is relatively limited. The main reasons cited by the farmers are too high insurance premiums and the lack of trust in the insurance provider honouring the insurance claim. Younger farmers were more interested in insurance.

Keywords: agricultural insurance, risk management tools, Estonian agricultural enterprises, the EU.

JEL Codes: Q12, Q14.

Introduction

Agriculture is an activity that is vulnerable to the impacts of wide variety of different risks. In recent years, Estonian farmers have been exposed to heavy crop losses caused by rainy summers, outbreaks of African swine fevers, consequences of Russian food import ban, end of EU milk quota system and very low milk prices etc. – developments that have forced many Estonian farmers to exit the sector, but also created political interest towards hedging instruments that would help the farmers manage different risks.

In general, the risks involved in agriculture can be divided into two main groups according to their origin: production risks and price risks. Production risks refer to risks connected with animal health, diseases, GMOs, pests, fungi, weeds, weather. Production risks can be viewed as internal risks, because they are located primarily within the farm and, therefore, can often be also managed through internal measures, such as improved hygiene (Schaper et al., 2009, Mateos-Ronco and Server Izquierdo, 2011). Although the management can have some control over these risks, if necessary, external risk hedging may be used, for example, in the form of insurance.

So far, risk sharing strategies in the context of production risk management have been of minor importance in Estonia. However, with the current difficult situation in agriculture, the introduction of alternative financial services for the farmers, including crop and income insurance schemes, that would contribute to the diversification of hedging opportunities in the agricultural sector, are under consideration. At present Estonia lacks long-term and trust-based solutions targeting the farming sector that would, on the one hand, promote structural changes, and, on the other hand, help the farmers to adapt to the ongoing changes and to mitigate the potential setbacks.

Previous research has shown there is a variety of different insurance schemes to hedge production risks in different countries, whereas financial services and insurance providers currently operating in the Estonian market do not offer such schemes for Estonian farmers. For example, Janowicz-Lomott and Lyskawa (2014) study management of agricultural risks in form on mutual funds in Italy and the implementation of this instrument in Poland. Turvey et al. (2013) discuss the demand and problems with of crop insurance in rural China etc.

Studies on the necessity and application of crop insurance at the micro level have shown that farmers exposed to a higher risk are more willing to use crop-yield insurance (Enjolras and Sentis, 2011). Harwood et al. (1999) point out that crop-yield insurance and crop-revenue insurance are a special case of risk management tools, where income risk is reduced and expected returns are enhanced. As subsidized by the government, such expenses as selling expenses (which include agent sales commissions and data processing costs) are not incorporated in the total premium. As a result of that, buying crop-yield or crop-revenue insurance raises average returns as well as reduces risk for most participating farmers (Harwood et al., 1999). Research by Enjolras and Sentis (2011) has found that crop insurance is used more widely by large-scale farmers than small-scale farmers, because insurance is too expensive for small farms. Wu (1999) has also brought out the link between the size of the enterprise and crop-yield insurance. Companies of very different types and sizes require different insurance instruments. Therefore, the demand for such insurance schemes (crop-yield insurance and crop-revenue insurance) by the farmers should be studied before the further elaboration and establishment of the corresponding insurance schemes.

The aim of the present paper is to study the demand for the crop-yield insurance and crop-revenue insurance products among Estonian farmers. Following research tasks have been set:

- 1) to provide an overview of the insurance schemes offered to Estonian farmers and their conditions;
- 2) to analyse the data from the farm survey in 2015 (Institute of Economics..., 2015) to identify the demand for crop-yield insurance and crop-revenue insurance products; and
- 3) based on the farm survey and the annual reports submitted by the farmers to identify whether farm characteristics and economic performance affects farmers' attitudes towards the insurance instruments. The farm survey was conducted as a questionnaire survey among the largest Estonian producers in order to study their interest in alternative financial services, including insurance schemes that are not currently available in Estonia. Descriptive analysis, t-tests and ANOVA are used to compare the respondents interest crop-yield insurance and crop-revenue insurance and on the impact of farm characteristics (farm size, farmers' age, gender, economic indicators) on the interest towards the insurance instruments.

The paper is organised as follows. Materials and methods' section 1 explains the agricultural risk management through insurance, section 2 describes the methodology of the farm survey. Results' section 3 provides an overview on the agricultural insurance system and state support in Estonia and section 4 concentrates on the results of the survey. Final section offers the conclusions.

Materials and Methods

Agricultural Risk Management through Insurance

Insurance is mainly considered as a hedging decision, being probably one of the most efficient and best-known tools for managing risks associated with agriculture (Mateos-Ronco and Server Izquierdo, 2011). Agricultural insurance can be used by farmers as a risk transfer strategy meaning that the consequences of risk incidences are transferred to other institutions. Typical instruments are fire insurance, crop insurance, weather derivatives, and the use of commodity futures exchanges (Schaper et al., 2009). Strong crop insurance systems are developed in many countries. In the USA insurance schemes are constantly elaborated on (Glauber, 2004). In Spain the insurance system serves as an essential part of agricultural policy for the stabilization of rural incomes (Garrido and Zilberman, 2007; Mateos-Ronco and Server Izquierdo, 2011). In the EU, after the CAP reform of 2003, it was considered necessary to consider the mechanisms involved in risk management, crises and natural disasters affecting agriculture. In 2013 the EU reform opted for conceding greater autonomy to member states to tackle these problems themselves with financial support from the EU (Mateos-Ronco and Server Izquierdo, 2011).

Mahul and Stutley (2010) point out that policy makers typically view agricultural insurance as a safety net for the farmers or as means of increasing their revenues and as the most active and functional tool supporting stability in the field of agricultural business. Subsidies play an important role in agricultural insurance. Mishra and Goodwin (2003) emphasize the role of subsidization level in the choice of an insurance strategy. Subsidies for insurance policies awarded by the EU member states vary from one country to another and depend on the national policy on risk coverage, support for certain subsectors or assistance to certain types of agriculture (Mateos-Ronco and Server Izquierdo, 2011).

Number of studies have concentrated on the connection between use of insurance and economic performance of farms in order to study if the different opinions about the insurance could be explained by some specific features in farms' economic indicators. Einav et al. (2012) show naturally occurring insurance decisions have very little correlation with other financial decisions. There might be occasions where the need for insurance to cover production risk may also be enhanced by the financial situation of the company, e.g. if the operating leverage of the company is very high or the scope of leverage is higher than average. Enjolras and Sentis (2011) point out that insurance is often targeted for large farms, perhaps because insurance is too expensive for smaller farms, which are indeed naturally less diversified. The farms with highest risks are more likely to have insurance (Enjolras and Sentis, 2011). Van Asseldonk et al. (2002) studied the link between the use of agricultural insurance and financial indicators, such as turnover or sales revenue, entrepreneurial net income and the level of debt. However, in many case no link between the use of insurance and financial indicators have been found (Enjolras and Sentis, 2011).

The research conducted among the farmers regarding insurance schemes has indicated some shortages, e.g. most non-citrus fruit producers in Spain are of the opinion that in general taking out an insurance does not necessarily guarantee the recovery of a large part of their losses (Mateos-Ronco and Server Izquierdo, 2011). The main reason for not buying the crop insurance is that the insurance premiums are considered too high so that smaller farmers cannot afford it. Enjolras and Sentis (2011) came to the same conclusion when analysing the use of crop insurance in France. In case of Turkish apple producers Yilmaz (2014) also pointed out too high insurance premiums, lack of knowledge and lack of trust in insurance companies among other problems.

Agricultural Insurance in Estonia: Methodology of Farm Survey

The objective of the farm survey carried out in 2015 was to assess the demand for producer-oriented alternative financial services, including insurance, in agricultural sector (Institute of Economics..., 2015). The survey gathered background data on the views of largest producers on the necessity for the introduction of crop-yield and crop revenue insurances. Farmers were asked if they would use the different financial instruments if those would become available. The survey also tried to identify under what conditions the producers would be interested in purchasing the crop-yield insurance and the crop revenue insurance.

The methodology in this study involved a combination of qualitative (interviews) and quantitative research (a questionnaire survey). In order to determine whether the different opinions of farmers concerning the crop-yield and crop revenue insurances could be explained by the differences in their economic indicators, the information retrieved from the annual reports of the respondents was also analysed. Thus, by integrating the farmers' opinions to their economic indicators, additional possibilities are created to link their estimates to their economic situation and other structural characteristics. When comparing the preferences regarding insurances and financial performance, the mean debt-to-assets ratio, profitability measured by profit margin (EBITDA/Sales revenue), and return on assets were estimated.

Farmers' survey was conducted in December 2015 in the form of an on-line questionnaire (Institute of Economics..., 2015). The present study analyses the answers related to general data about the respondents and the enterprises, the companies' financial situation, the need for insurance and obstacles to their application. In the part of the survey concerning alternative financial services the respondents were asked to assess if they would use crop-yield insurance and the crop revenue insurance.

Based on the data from the Estonian Agricultural Registers and Information Board (ARIB) the survey sample was formed from the list of farmers receiving agricultural supports, who had at least 200 hectares of agricultural land eligible for agricultural support at their disposal in 2014 and/or who had at least 50 animals (cattle, pigs). These criteria were chosen to reach the main target group of the insurance services – largest producers. Invitation to participate in the online survey was sent out to 909 farmers in total. In 7.8% cases there were problems with e-mail addresses (inaccurate or absent e-mail address, the e-mail message was not delivered). Together with respondents starting the questionnaire several times and incomplete submissions, the survey was completed by 208 producers. After removing incomplete responses, 130 respondents that had completed over 90% of the questionnaire remained in the database (response rate 14.3%). The request for annual reports for 2013 and 2014 from the Estonian Central Commercial Register gave answers for 80 of the respondents. In other cases, the farmers were either self-employed or their economic data for these years were not available in the Commercial Register (Institute of Economics..., 2015).

In the next section, the main results of the survey are described. T-test, ANOVA were used to compare if the farm characteristics had impact on farmers' opinion for the need of crop-yield and crop-revenue insurance.

Results

Agricultural Insurance in Estonia – Current Situation

As a part of the farm survey in 2015 (Institute of Economics..., 2015) Estonian agricultural insurance system was reviewed. The analysis showed that so far the agricultural insurance in Estonia has operated on a voluntary basis. In comparison with other EU countries, the agricultural insurance market in Estonia is very limited.

Two insurance companies (ERGO Insurance SE; If P&C Insurance AS) currently operating in Estonia offer special livestock insurance products hedging livestock-related risks and targeted at agricultural enterprises. Livestock insurance offers the possibility to insure cattle, swine, sheep and other animals as mutually agreed upon. It is possible to buy additional insurance cover that will compensate for the treatment costs, including the surgery costs of the animal. Livestock is insured against diseases, fire, natural disasters, theft of the animal (Institute of Economics..., 2015).

Until 2012 there was one insurance company offering insurance for crops and so it was possible for the farmers to insure their crop yields. However, since 2012 the crop-yield insurance is not in the list of insurance products available in Estonia. The crop insurance was meant for insuring the yield of spring cereals (barley, oats and wheat) and industrial crops (oilseed rape). This insurance was especially geared to covering losses from adverse weather conditions. Depending on the crop, the insurance premiums in 2012 remained in the range of 30-120 €/ha (Klenovski, 2012). Low interest towards crop-yield insurance on the part of insurance companies may be explained by the small volume of potential premiums.

The analyses of the available risk management instruments show that farmers do not have enough instruments to manage production risks in Estonia. Only two insurance companies offer any kind of agricultural insurance in 2016 and there is only livestock insurance available in Estonia. Crop insurance is not available.

Until 2008, the emergency crisis support provided by the state in the event of a natural disaster was available for the farmers. Such an extraordinary support did not comply with the principles of the EU agricultural policy. As the EU allows to support agricultural insurance from national sources, Estonia has established an agricultural insurance support for small and medium- sized agricultural producers, reimbursing the policyholders' premiums (Agricultural Register and..., 2016). Not in full, but nearly 2/3 of the total premiums are compensated if all requirements are filled. The insured events include the following: natural disasters (floods, forest fire), unfavourable weather conditions like frost, hail, storm, drought (if it destroys more than 30% of the average annual yield), and animal and crop diseases. The insured objects are cereals, legumes, potatoes and other crop cultures, as well as animals.

In 2015, the amount of premium reimbursements applied for exceeded more than twice the state budget earmarked for compensation (12 000 €), and therefore the amounts allocated to the applicants were proportionally reduced. However, the total amount of support is relatively small, and as table 1 shows, the budgetary funds have declined rapidly in past years. In 2011 for example, the state budget to cover agricultural premiums was approximately 32 000 €, while this year it is just 10 000 €.

Table 1. State Budget Fund for Compensation Insurance Premium

Year	2011	2012	2013	2014	2015	2016
State budget fund for compensation insurance premium, €	31 956	20 000	20 000	10 000	12 000	10 000

(Source: Agricultural Register and... (2016))

It can be concluded that farmers do not have enough instruments to manage production risks. It is also evident that the budget of the public agricultural insurance support is not sufficient to grant the farmers public aid for the compensation of agricultural insurance premiums.

Results of Farm Survey in 2015

Out of the respondents of the survey, 73% were men and 26% women. The average age of respondents was 47.6. The producers involved in the survey used a total of 56 297 hectares of agricultural land, kept 22 934 dairy cows and 62 010 pigs. Thus, the sample comprised approximately 25% of the larger milk producers and pig farmers (Institute of Economics..., 2015).

The average size of agricultural land was 610 ha. Respondents on average owned around 33% of the land at their disposal. The share of rented land was lower in case of smaller producers, while farms with 101- 1000 ha rented most of their land (Figure 1). 45% of respondents were involved in cattle farming. As the sample of the survey was formed on basis of the largest producers in Estonia, the average herd size per farm was also large – 463 (Institute of Economics..., 2015).

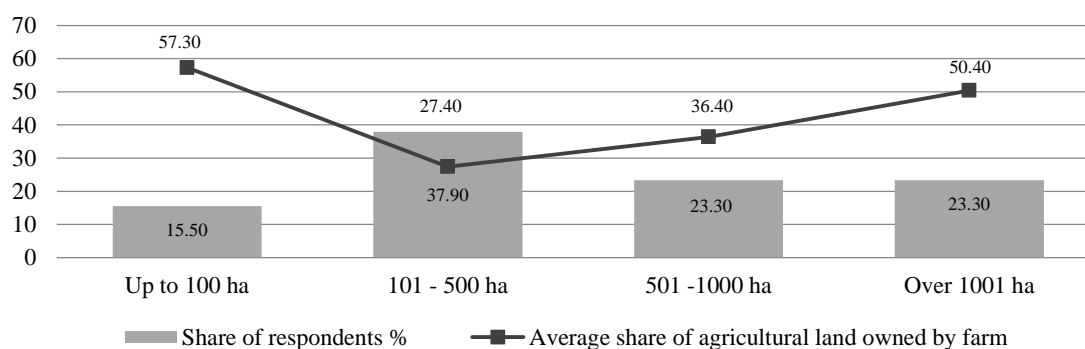


Figure 1. Respondents by Size Group of Agricultural Land, %

(Source: authors' calculations)

In the questionnaire survey producers were asked «Would you use the crop yield insurance?» and «Would you use crop revenue insurance?», if those instruments would become available. The respondents assessed the questions in Likert-type scale of 5 (Figure 2). The mean score of crop yield insurance was 2.71 and for crop revenue was 2.80 in the scale of 5 indicating relatively limited interest towards the instruments.

A quarter of the respondents expressed their interest in the crop-yield and crop revenue insurances, whereas the number of respondents who thought that they would definitely or rather not use crop-yield insurance was somewhat bigger (45%). The respondents definitely ready to use crop insurance, constituted the smallest share (2.9%).

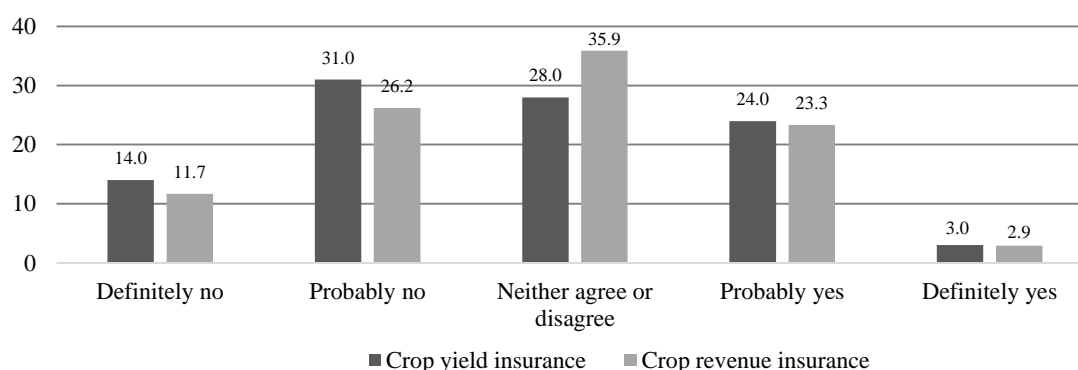


Figure 2. Willingness to Use Crop Yield and Crop Revenue Insurance, %

(Source: authors' calculations)

Thus, it can be said that somewhat more respondents have a negative than favourable opinion. The majority of the respondents do not have a definitive view on if they would use the instruments or they plan not to use those insurance products.

Farmers were asked the reasons why they would not use the insurance products (Figure 3). Just 22% of respondents believed that they do not need crop yield insurance and so the lack of interest is not necessarily because of the view that farmers do not need this insurance. The main concern was that high insurance premium is likely to make insurance unreasonably expensive. Regarding crop yield insurance, French farmers hold a similar view (Enjolras and Sentis, 2011). Another issue was the lack of trust in the insurance companies. 40% of farmers believe that in the event of damage they are likely to encounter problems in receiving insurance benefits.

The farmers had the option to add other reasons and explain their concerns in the questionnaire. In their free-format answers the entrepreneurs also mentioned that as the conditions for crop-yield insurance and crop revenue insurance are not yet known, it is impossible to foresee their prospective demand. This might also be the reason the respondents had not formed a definite opinion about the insurances. Several respondents pointed out that the existing insurance companies are already offering some of the services and so it is unclear if any additional insurance instruments are necessary and if the additional measures would not run into same problems as the current ones. A number of respondents preferred hedging their risks themselves and coping on their own, adding that it would be reasonable for the farm to save enough reserves to be able to face the crisis with their own means. This approach was justified by the fact that as the administrative expenses of the insurance system are to be borne by the policy-holders, which may make the insurance scheme unreasonably expensive. The producers' standpoint that it is not possible to form their judgement about the necessity of the crop-yield insurance and crop revenue insurance until the conditions related to the insurance instruments are known, indicates the need to elaborate on the more specific conditions of the insurances.

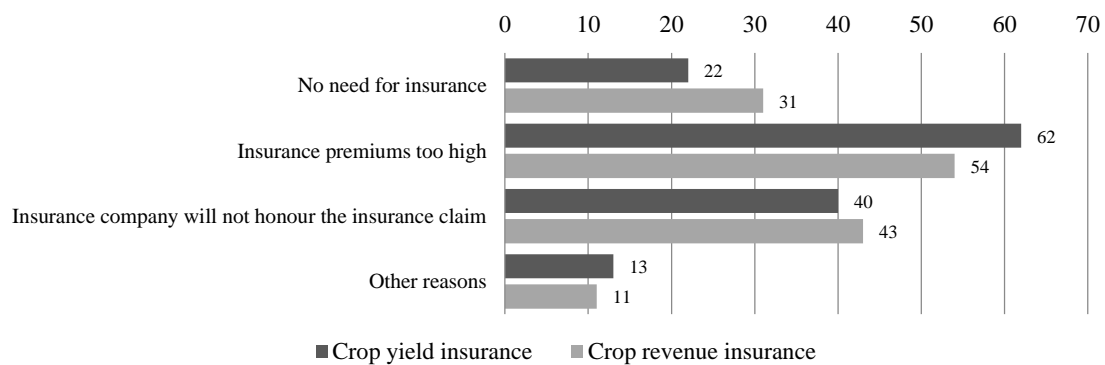


Figure 3. Reasons for the Lack of Interest in Insurance, %

(Source: authors' calculations)

In order to study the effect of farm characteristics on the opinion on the need for insurance, t-test and ANOVA was used to compare mean scores across different groups. The gender of the farmer did not have significant impact on their opinion. However, the age of farmer did have impact. The median age of the farmers was 47 years. Farmers older than 47 gave lower scores – the mean score for if they would use crop yield insurance was 2.33. For younger farmers the mean score was 2.96 and the difference was statistically significant in t-test ($t=2.93$, $p<0.01$). The older farmers gave also lower scores for crop revenue insurance ($M=2.5$) than younger farmers ($M=2.96$; $t=2.26$, $p<0.05$).

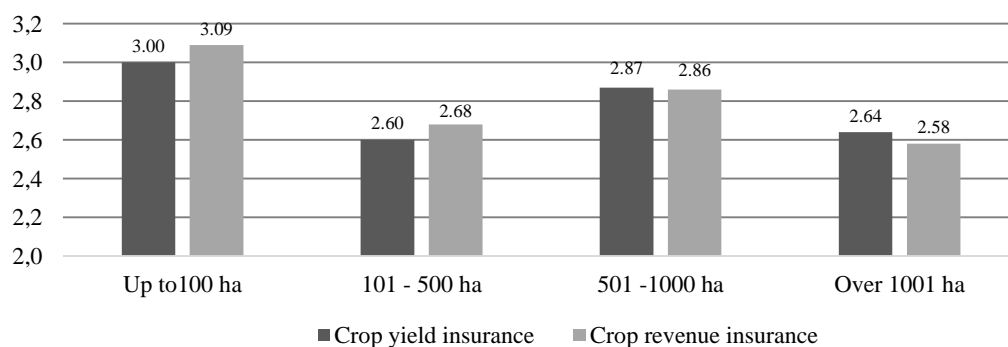


Figure 4. Mean Scores on Willingness to Use the Insurance by Size Group of Agricultural Area of Respondents

(Source: authors' calculations)

Smaller farmers showed somewhat higher interest in the insurance instruments (Figure 4); however, the differences with other size groups were not statistically significant in ANOVA ($p > 0.05$). Also the herd size of the farmer did not have significant impact on their opinion on the insurance.

In order to evaluate whether the economic situation of the farmers had impact on the attitudes towards crop-yield insurance and crop revenue insurance, the information retrieved from the annual reports of the respondents was combined with the survey results. Indicators for leverage (debt/asset), profitability (EBIT/Sales revenue) and return of assets (ROA) were calculated. Median values were used to divide farmers into groups on the basis of those indicators and t-test was used to compare the differences in the scores given to the questions on whether the farmers would use insurance.

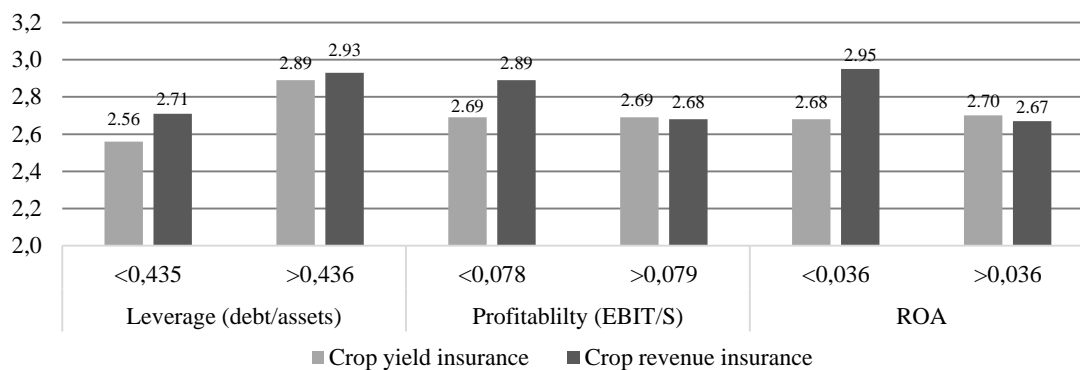


Figure 5. Mean Scores on Willingness to Use the Insurance by Economic Indicators

(Source: authors' calculations)

The median debt to assets ratio for the respondents was 0,435; for the profitability of EBIT to sales ratio the median was 0,078 and for ROA 0,036. The enterprises whose leverage was above median gave somewhat higher scores to interest in using the insurance instruments, but the difference in scores with the lower leverage group was not statistically significant. The enterprises with lower profitability and ROA seemed somewhat more interested in crop revenue insurance, but the differences in mean scores were also not statistically significant. Thus in the results of the present survey, the financial indicators did not impact the opinion on whether the farmer would use the insurance instruments.

Conclusion

The current study analysed the Estonian farmers' demand for crop-yield insurance and crop revenue insurance schemes. In comparison with US and Western Europe, the agricultural insurance system in Estonia is underdeveloped. As the analysis of agricultural insurance products showed, only livestock insurance is currently available for agricultural producers, while crop insurance is not available.

On the other hand, the survey of largest farms showed also a relatively modest interest towards crop revenue and crop yield insurance. The interest was somewhat higher towards crop revenue insurance, however, in both cases the number of respondents believing that they would not use the insurance instruments was higher than those interested in the instruments. At the moment the respondents regard the introduction of such insurance instruments with a degree of caution, because producers fear that the premiums to be paid for such services would be too high so that the insurance would not pay off. The problem with too high insurance payments is a common obstacle demonstrated by previous research on the issue. As several farmers in the survey commented that in Estonia the more sensible approach is to put aside enough reserves to be able to face the crisis with their own means. Also as in the end the administration costs would be covered the clients, the insurance scheme might become too expensive.

Another obvious issue is the trustworthiness of the insurance companies as over 40% of farmers thought that they might be running into problems in receiving the insurance benefits in the event of damage. This reflects on the negative image of insurance companies and on the lack of experience with this kind of insurance instruments that are common in many other countries.

The limitation of this study is that it asks farmers' opinions about a hypothetical situation as the crop revenue and crop yield insurance does not yet exist in Estonia. The entrepreneurs mentioned that as the specific insurance conditions are not known yet, it is impossible to make decisions concerning their necessity.

Most of the respondents did not state that this kind of insurance is not needed at all. From one side, the lack of crop insurance instruments means farmers lack experience and knowledge on its possibilities and have trouble in voicing the demand for this kind of measures. On the other side, insurance companies see this as a lack of demand and would not put an effort in developing this kind of instruments. The insurance products must be significantly differentiated because different producers have very different needs and in a small market like Estonia the insurance providers are likely to see it as not particularly profitable.

The farm characteristics and financial indicators did not have significant effect on the opinions on the insurance with exception of farmer age. The younger farmers had somewhat higher interest in the insurance instruments.

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