

# THE EFFECT OF INCOME STABILISATION TOOL ON SLOVAK AGRICULTURE

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**Abstract:** *Managing income risk in agriculture is one of the important issues for farmers and policy makers nowadays. There exist a set of instruments and mechanisms for farmers to face the income volatility, including the individual or public support. Under II Pillar, the Common Agricultural Policy (CAP) offers the support for less favoured farms in the way of insurance, mutual fund, and Income stabilisation tool. The Income Stabilisation Tool (IST) represents the compensation to farmers for a “severe drop” in income, if the farm experienced an income loss of more than 30% compared to the 3-years average or the Olympic average of the preceding five-year income realizations. However, none of the EU countries has been currently using the tool operationally. The main objective of the paper is to investigate the potential effect of the Income Stabilisation Tool on mitigation of income risk in Slovak agriculture. The results of the paper show the existing possibility to improve financial situation and reduce the income inequality of particular Slovak farms in the future.*

**Keywords:** *Income risk, income stabilisation, CAP, Slovak agriculture.*

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## 1. INTRODUCTION

Risk is inherent in all economic activities, but due to external factors that influence the yield and price of agricultural output, farmers particularly are exposed to increased uncertainty (EC, 2017). During the last period, the European farming faced the spectrum of environmental, economic, financial, social and institutional risks. These risks are resulting from the imbalances on the market, that cause volatility of input and output prices, higher probability of extreme weather events, increasing dependence on land owners and financial institutions, ongoing technological progresses such as digitization, organizational changes within the value chains, or changing consumer preferences (Meuwissen, 2018). Uncertainty about prices, and thus income in agriculture increased during the price spikes in 2007-2008 and 2010-2011, followed by a severe drop in prices. When prices for inputs such as fertiliser, seed or feed increase, while the price of the agricultural output remains stable, the profit margin is reduced. Farmers with a low profit margin will therefore be more sensitive to income risk. Income risks do not only refer to income volatility but also to low levels of income, that can result in cash-flow constraints and lead to farmers' bankrupt. Serious impacts on agricultural production, has also the climate change and extreme weather events. The 2017/2018 has been current example, when heat waves and drought in various areas negatively affect EU production. Increased occurrence of risks has been raising farmers' concern and need for an adequate risk management approach. (EC, 2017).

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In the CAP, risk management instruments have become more important over the time. Since 1998, the European Community has been intensively investigating the possibilities of how to assist farmers in stabilizing their incomes (Meuwissen et al., 2008). With the 2008 Health Check, a risk management layer was introduced for the first time. It provided targeted risk coverage instruments such as subsidised insurance schemes and mutual funds in the operational programmes for the fruits, vegetables and wine sector. In order to support farmers in coping with income risks, several instruments have been proposed (see e.g. Cafiero et al., 2007; Meuwissen et al., 2008; Meuwissen et al., 2013; Bielza Diaz-Caneja et al., 2008; European Commission, 2008). The policy-makers finally introduced the support for risk management, after the 2013 reform in the Pillar II for the period 2014-2020 (EC, 2013). Risk management tools proposed in the Regulation (EU) n°1305/2013 allowed the Member States to allocate funds of the European Agricultural Fund for Rural Development (EAFRD) to provide financial contributions to income stabilization by 3 instruments: insurance premiums, mutual funds and a newly introduced Income stabilisation tool (Cordier, 2015; Pigeon et al., 2014; DG Agri, 2011).

Income from farming refers to the sum of revenues the farmer receives from the market, including any form of public support, deducting input costs (EC, 2013). The Income Stabilisation Tool, defined in the Article 39 (1305/2013) is a risk management tool for compensating farmers for severe income lost. A severe income drop in this proposal is defined as a decrease of 30 % of the average annual income of the individual farmer in the preceding three-year period or a three-year average based on the preceding five-year period excluding the highest and lowest entry (Olympic average). Independent of the source of this income reduction, farmers should receive compensation payments for less than 70% of the income lost in the year the producer becomes eligible to receive this assistance (EC, 2013; El Benni et al., 2016). Even if the compensation of income lost has been offered, under the 2014-2020 only two countries, Italy and Hungary and one region (Castilla y Leon) in Spain planned expenditure of EUR 130 million for the IST. However, none of the EU countries has been currently using the tool operationally.

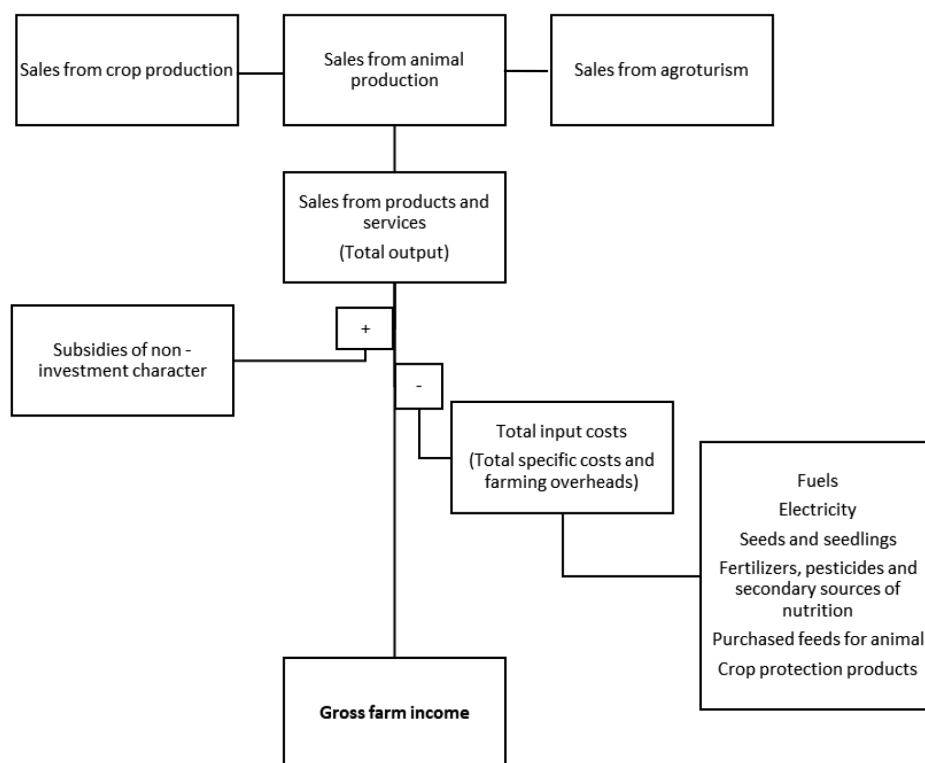
The new risk management tools have been assessed by scientists to consider the feasibility and potential positive effect on the agricultural sector. One of the first ex-post studies of the EU Commission (EC, 2009) tested the concept of an income policy that would compensate 70% of a 30% minimum income loss due any reason, using the FADN data. The 23% of the EU-25 farmers in 2006 had an estimated loss greater than 30% with a required compensation of \$11.2 billion (€9.7 billion per year as an average for the last decade, EU-15 and variations from €8.5 to 11.4 billion). The ex-ante research on the IST focusses on actuarial evaluations of a potential income compensation, governmental costs, impacts on optimal farm programmes, and identification of potential beneficiary groups of farms (Zgajnar, 2017; Pigeon et al., 2012; Liesivaara et al., 2012; Mary et al., 2013; El Benni & Finger, 2014). The authors El Benni et al. (2016) noted, that in the ISTs ex-ante analyses two basic approaches are employed. First, farm level optimization models are used to investigate how the IST affects a specific farm and how farmers react to the provision of such tool (e.g. Turvey, 2012; Mary et al., 2013; Liesivaara et al., 2012). These approaches can reveal insights in farm-level decision making but are focused on a limited number of farms. Second, bookkeeping data across a large set of farms and years are used to set up simulation models and investigate income risks of farms to specify potential indemnification within the IST (e.g. Kimura & Anton, 2011; Pigeon et al., 2012). Zgajnar (2017) added that the third approach is the analysis of data series with the regression-based econometric models (Pigeon et al., 2014; El Benni et al., 2016).

In the Slovak agriculture, the potential effect of IST on individual farms has not been evaluated yet. Therefore, we firstly focus the research on the identification of farms, that suffered more than 30% lost in the period 2009 – 2017 and could have been indemnified since the 2014 year, when risk management tools in the second Pillar of CAP have been introduced. The main objective of the paper is to examine the potential effect of the Income Stabilisation Tool in compensating the farms in the income lost and mitigating the income risk in Slovak agriculture.

## 2. METHODOLOGY

The data used for the analysis are obtained from the Ministry of Agriculture and Rural Development of Slovak republic. After outliers exclusion, the data set consists of financial statements of 654 individual farms in the years 2009 – 2017. The outliers are companies that did not exist during the whole observed period and had negative reference gross farm income. Farms are divided and examined separately according to their size, legal form and production orientation. Based on the size are farms divided to the group of micro (1 - 9 employees), medium (10 - 49 employees) and large (50 - 250 employees). From the legal forms are selected only farms with the legal form cooperative or business company (Limited liability company and Join-stock company). Based on the production orientation, the companies are divided into crop and animal farms. The classification criterion is more than 50% share of sales from crop production or livestock production to the total sales of own products and services.

The ability to receive indemnification from Income Stabilisation Tool's fund have the farms, that recorded greater than 30% loss compared to the average annual income of the previous three year or to the 'Olympic' average of the previous five years. In the paper we use the first condition for identification of farms instead of 5-years Olympic average, as it is considered to be more specific (El Benni et al., 2016; Cordier, 2015). The payments by the IST mutual fund to farmers shall compensate a maximum of 70% of lost income. One of the obstacles in data selection is how to calculate the income. According to the European Commission proposition (EC, 2011) the income is defined as the sum of revenues the farmer receives, including any form of public support, deducting input costs. However, the authors have used different income categories for IST assessment, for example Net farm income (Hausheer Schnider, 2011; El Benni et al., 2016), profit margin (Liesivaara et al., 2012), farm net value added (Pigeon et al., 2012), gross margin (Zgajnar, 2017). In the paper we decided to identify the farms that could have receive the indemnification based of the Gross farm income calculation (Figure 1). Gross farm income refers to the sum of Sales from products and services (Total output), including Sales from crop production, Sales from animal production and Sales from agrotourism, plus the Subsidies of non-investment character, deducting the Input costs. Input costs refer to the FADN data categories called Total specific costs and Total farming overheads, and in Slovak financial statements are recorded in the account Consumption of material, energy and other non-storable supplies (fuels, electricity, seeds and seedlings, fertilizers and pesticides, crop protection products, purchased feeds for animals) and total intermediate consumption. The total external factors such as wages, rent and interest paid have not been taken into account. We considered 6 different periods covering data in the years 2009 – 2017, concretely 2009 – 2011, 2010 – 2012, 2011 – 2013, 2012 – 2014, 2013 – 2015, 2014 – 2016. The first three years are used to specify reference income levels and the fourth year is used to specify the level of indemnification, if the loss is greater than 30%. Because we investigated hypothetical IST coverage, we calculated the maximal possible indemnification of 70% from the more than 30% loss.



**Figure 1.** Gross farm income scheme

**Source:** own processing

### 3. RESULTS

Information from the financial reports of Slovak agricultural companies are used to analyse, which farms in the recent years suffered the loss adequate for the indemnification from the funds of Income Stabilization Tool. The government of Slovak republic has not implemented the IST yet, therefore the calculations show hypothetical scenarios of the ex-post analysis in the years 2009 – 2017. We used the 3-years average to calculate the reference income according to the variable “Gross farm income”. The final data set consists of 654 agricultural companies from all regions of Slovakia. The removed outliers are the companies with insufficient information (missing data) in the observed period, and companies with negative reference income (3-years average of Gross farm income). We classified and individually examined the agricultural companies according to their production orientation (crop and animal farms), size (micro, medium, large) and legal form (cooperatives and business companies – Limited liability company and Join-stock companies). The structure of the data set is presented in the Table 1.

The results show that in the year 2012, 15% of Slovak farms could have received the indemnification in the total amount of 19 653 040 EUR, if the 70% of loss would have been covered. The majority of identified farms were focused on the animal production (68%), had the medium size (57%) and legal form of business company (59%). Only 9% of farms were eligible for compensation in year 2013 (12.97 mill EUR) and according to characteristics had similar farm types as in the previous year.

The difference is remarkable since the 2014, after the new CAP programming period, mainly in the case of production orientation, where the difference between groups is smoothed. In the year 2014 the greatest compensation could have been paid, amounted to almost 27.42 million EUR, although the percentage of indemnity farms is the same as in the year 2012. Even if, the

same share of farmers in 2015 and 2016 experienced the loss more than 30%, the potential indemnification refers to different amounts (approximately 5,5 million EUR more in 2016). The smallest number of farms (only 52), could have been indemnified in 2017, with the total amount of 11.07 million EUR. According to the characteristics, there is a changing structure of indemnity farms from the point of size. The lowest share had the large companies with more than 50 employees, instead of micro farms as it was in all previous years.

**Table 1.** Structure of agricultural companies

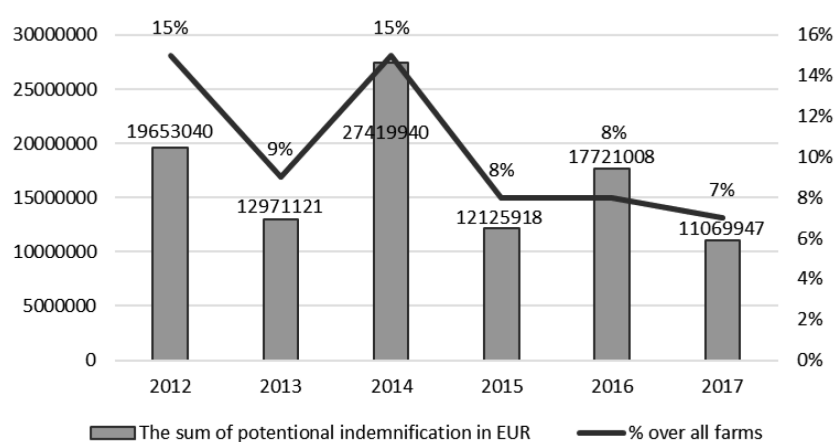
Classification criterion	Category	Absolute value	% share
<b>Production orientation</b>	Crop farm	278	43 %
	Animal farm	376	57 %
<b>Legal form</b>	Cooperative	337	52 %
	Business company (Ltd. JSC)	317	48 %
<b>Business size</b>	Micro (1-9)	107	16 %
	Medium (10-49)	342	52 %
	Large (50-250)	205	32 %
<b>Sum</b>		<b>654</b>	<b>100%</b>

Source: own processing

**Table 2.** Structure of agricultural companies

	2012	2013	2014	2015	2016	2017
<b>All farms</b>	15%	9%	15%	8%	8%	7%
<b>Cooperatives</b>	41%	44%	42%	43%	42%	49%
<b>Business company</b>	59%	56%	58%	57%	58%	51%
<b>Micro</b>	19%	14%	26%	20%	17%	25%
<b>Medium</b>	57%	59%	48%	60%	56%	67%
<b>Large</b>	24%	27%	26%	20%	27%	8%
<b>Crop farms</b>	32%	37%	54%	49%	54%	49%
<b>Animal farms</b>	68%	63%	46%	51%	46%	51%
<b>The sum of potential indemnification (€)</b>	<b>19 653 040</b>	<b>12 971 121</b>	<b>27 419 940</b>	<b>12 125 918</b>	<b>17 721 008</b>	<b>11 069 947</b>

Source: own processing



**Figure 2.** Potential indemnification of Slovak farms in 2012-2017

Source: own processing

The Figure 2 shows the development of share of farmers experiencing an income loss of more than 30%, and the amount of compensation that would have been required if the Income Stabilisation tool would have been implemented place between 2012 and 2017 in the Slovak

agriculture. The line indicates the % share of farmers eligible for compensation, and the bars indicate the budget necessary for indemnification in the same years. For better assessment of the potential effect of IST, we examined also the scenarios in 2012 and 2013, although the IST belongs to the 2014-2020 CAP regulation.

Undoubtedly, the Income Stabilisation Tool enlarges the risk management opportunities for farmers, and our results show that each year millions of Euros could have been used for loss coverage, but the future implementation in the national policy remains questionable. The CAP gives the Member states opportunity to define the own rules for the constitution and management of the mutual funds, in particular for the granting of compensation payments to farmers. Therefore, it is necessary to prepare administration and monitoring of farms, methodology for arrangement of funds, penalties in case of negligence on the part of the farmer and other steps, that might be costly.

#### **4. FUTURE RESEARCH DIRECTIONS**

The Income stabilisation tool seems to be an effective instrument in the mitigation of income risk in agriculture. Therefore, it is questionable, why none of the European countries has implemented the tool in the national agricultural policy so far. The critics of the IST consider as negative that the risk management tools in the Article 36 of Regulation (EU) n°1305/2013 are optional and not obligatory, given the farmers rather suggestion with very vague guidelines than effective programmes (Cordier, 2015). Questions that arise by governments and farmer organisations are how to organise, initiate and govern the mutual fund. What should happen when funds have to be paid in one of the starting years when the capital stock is still very small is also a problem. Moreover, the budgetary needs of the IST can be very volatile and quite demanding. If the scheme is implemented in all Member States, the maximum budget needs for one year are estimated at 22 billion EUR. Another obstacle of the IST is that funds may only be used in case of income losses larger than 30%. Furthermore, the programming of ISTs is hampered as it is not allowed to specific sectors, although there are large differences between agricultural sectors in terms of the risks faced and the chance that payments are received (EC, 2017). The selection of income category and its correct calculation is found to be another problem. The income definition that is used influences compensation. For example, if decoupled payments are not included the scheme is triggered more often. The accounting systems in European countries differ, what might cause misleading in income consideration, when necessary data is not available. Moreover, it is hard to accurately assess farmer income and revenue, especially for small farms that do not have an adequate accounting system. The potential problem in the future could also be purposely adjustment of financial statements in order to obtain funds for the farms. These issues are very challenging for the policy makers, because the improvements and specifications of IST, as well as other risk management tools in the CAP after 2020 are expected. In the future, we would like to extend our research and examine more deeply the effects of the IST implementation in Slovak agriculture.

#### **5. CONCLUSION**

The Common Agricultural Policy 2014–2020 has been mainly aimed at compensating farmers for the negative effects of price volatility and tackling income volatility. Member States have the possibility to support three risk management tools (insurance schemes, mutual funds and an Income Stabilisation Tool) through their rural development programs. As the CAP offers the tools to mitigate the agricultural risk connected with income volatility, it should be important for each country to open the question of risk in agriculture in the scientific research.

Income Stabilization Tool (IST) can be implemented by EU-Member States to provide up to 70 % compensation to farmers who experienced more 30 % loss. In the paper we examined the potential indemnification for 654 agricultural companies in the years 2012 – 2017. During the observed period, the compensation would have amounted, on average to 16.8 mill. EUR per year for, varying between a minimum of 11.07 mill. EUR in 2017 to a maximum of 27.42 mil. EUR in 2014. The majority of indemnity farms are the business companies with the medium size. The production orientation seemed to be an important characteristic in years 2012 and 2013, when more than 60% of farms suffering the loss were focused on animal production, however since 2014, when the new CAP programming period started, the differences has been smoothened.

Although, the additional funds for covering the loss of farmers and stabilizing their income are a great option, a lot of questions arises with the implementation of IST in Slovakia. These have not only the methodological character (insufficient guideline, problematic income definition, inconsistent accounting systems, necessity for appropriate monitoring, etc.), but also the problem with prevention of negligence on the part of farmers, who can adjust the financial statements in order to receive funds. Therefore, the CAP should specify and improve the risk management tools implementation in the new programming period after 2020.

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