THE ROLE OF CAP RISK MANAGEMENT IN INCOME STABILISATION: EMPIRICAL EVIDENCE OF IST IN SLOVAKIA

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ABSTRACT

In the European Commission (EC) proposals for the Common Agricultural Policy (CAP) post-2020 is emphasized the aim to better support the resilience of agricultural systems in the European Union (EU). This resilience is based on the concern that the agricultural sector should be supported in responding to current and future economic, societal, and environmental challenges and risks. Managing risk in farming includes number of activities and strong effort of farms and policy makers. One part of risk management refers to income stabilisation, aimed at decreasing the unstable financial situation and high level of income volatility in European agriculture. In the EU, every year at least 20% of farmers experience an income loss of more than 30% compared with their average income in the three previous years. The public instruments to mitigate the income risk of farmers included under the Pillar II (insurance premiums, mutual funds, and the Income stabilisation tool) have been implemented only by very low number of EU countries. In the paper, we analyze the ability to decrease the instability of Slovak farmers with the use of Income stabilisation tool of CAP. The Income stabilisation tool (IST) can be used to indemnify the farmers, who experienced a "severe drop" in income, reflecting the income loss of more than 20% or 30% compared to the 3-years average annual income, or the 5-years average annual income, excluding highest and lowest entry (Olympic average). The IST has not been used in the Slovakia, or any other European country operationally so far.

Keywords: *Income stabilisation tool, Agriculture, Risk management, CAP,*

JEL classification: *Q10, Q13, Q14*

1. INTRODUCTION

Farmers´ income is a key element in EU agricultural policy, aiming at ensuring the welfare for the agricultural producers and the help for farmers facing the risks inherent to their business (Tangermann, 2011). An objective of EU Common Agricultural Policy (Article 39 of the Treaty on the Functioning of the European Union, TFEU), is to increase agricultural productivity, 'thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture' (EC, 2017). 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 uncertainties related to farm business (such as extreme weather conditions or market changes) have led, after various policy reforms, to CAP direct payments, supporting farmer income with 72% of the current EU farm budget (DG Agri, 2018). The other way of supporting farmers and ensure their

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income stability is the use of risk management measures from the Pillar II, especially Income stabilisation tool.

The Income stabilisation tool, defined in the Article 39, Regulation (EU) n°1305/2013 is a risk management tool for compensating farmers for severe income drop. A severe income drop is defined as a decrease of more than 30% of the average annual income of the individual farmer in the preceding three-years period, or five-years 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 loss in the year the producer becomes eligible to receive this assistance (EC, 2013; El Benni *et al.*, 2016). Basically, the Income stabilisation tool is a mutual fund that compensates farmers for income losses not production losses. The principal should be that the participating farmers contribute to the mutual fund to establish a financial reserve. Furthermore, the fund obtains the financial support from EU budget. The reserve is used to compensate farmers, who suffer in the next period for income losses, independent of the cause (EU Reg. 8314/2017). The contribution and regulation of IST fund is in competition of individual national agricultural policies. Since January 1st 2018 the IST mechanism has been amended with the Agricultural Omnibus Regulation of European Commission. The threshold rate has been lowered to more than 20% of average annual income, instead of 30%. The sector-specific IST, targeting the independent farm sectors, has been added to the toolkit and the calculation of the annual loss of income of the farmer (both general and sector-specific ISTs) based on indexes has been allowed (Meuwissen, 2018; Cordier, 2020). The compensation rate stayed at maximum 70% of loss. The adjustments have been suggested after unsuccessful implementation of IST in three member states, which had planned to use the tool operationally: Spain, Hungary and Italy. In Italy, there has been problem to monitor the historical income of individual farmers, and the negative attitude to the high level of the threshold rate (Santermo, 2018). In Spain, also the practical measurement of income caused difficulties, as well as the application of IST concerned to specialized dairy producers. In Hungary a great focus has been paid to implement IST, but the lack of guidelines, experience and knowledge caused that it has not been developed so far (Cordier, 2020; Chartier, 2017).

There are also other obstacles and arising questions connected to the implementation of tool. The main criticism states that the risk management tools of EU are more suggestions, rather than effective programs (Vera, 2017; Cordier, 2014). The guideline is hardly insufficient, there is no experience in European or other countries outside with the implementation to national policies, there does not exist public platform to share experiences which could potentially build common benchmarks, and the willingness of farmers to cooperate is often very low. The lack of knowledge about the positive effect of risk management in agriculture leads to disinterest to use the tools and participate. There is a lack of leadership in the farmers' unions, and usually ineffective co-operation between the Ministry of Agriculture and the farmers' unions (Meuwissen *et al.*, 2018). The other problem is the monitoring of historical incomes, as well as the appropriate choice of income variable. There raises also the potential double compensation problem, if farmers use two instruments at once (e.g. insurance premium and IST). Potential threat is the ability of farmers to adjust accounting records in order to obtain IST premium.

Despite of the obstacles in implementation, the scientific research has proved many potential positive effects of the income stabilisation of European farmers. The ex-ante research on the IST focusses on actuarial evaluations of a potential income compensation, governmental costs, impacts on optimal farm programs, and identification of potential beneficiary groups of farms (Mary *et al.*, 2013). In the ex-ante analysis of IST, two basic approaches are employed. The first are the farm level optimization models, which are used to investigate, how the IST affects a specific farm, and how the farmers react to the financial compensation (Turvey, 2012; Mary *et al.*, 2013; Liesivaara *et al.*, 2012). These analyses emphasize the farm-level decision making,

but are focused on a limited amount of farms. The second are the simulation models, using the bookkeeping data across a large set of farms in years, to investigate income risk of farms and potential indemnification within the IST (Kimura and Anton, 2011; Pigeon *et al.*, 2012). Zgajnar (2017) added the third approach, the regression-based econometric models of data series (Pigeon *et al.*, 2014; El Benni *et al.*, 2016). The main objective of the paper is to evaluate the income instability of Slovak farms in the years 2012 – 2017, and the calculate the potential indemnification for Slovak farmers with the use of the Income stabilization tool of CAP. The paper is the further extension of the study Boháčiková *et al.* (2020).

2. DATA AND METHODS

The data used for the analysis consist of the financial statements of individual farms in Slovakia, operating in the period 2009-2017. All information is obtained from the Ministry of Agriculture and Rural Development of Slovak Republic. The final data set is created after outlier removal and consists of 653 farms. Farms are examined according to their legal form and production orientation. The legal forms cooperatives and business companies (Limited liability company and Join-stock company) are taken into account. According to the production orientation, the farms are divided into crop and animal farms. The classification criterion for production orientation is exceeding 50% share of sales from crop production or animal production to the total sales of own products and services. The structure of data is presented in Table 1.

Table 1. Structure of data

	Category	Absolute value	% share
Legal form	Cooperative	336	51%
	Business company (Ltd. JSC)	317	49%
Production orientation	Crop farm	278	43%
	Animal farm	375	57%
Size of land	LPIS more than 500 ha	121	18.5%
	LPIS (500-1000)	168	25.7%
	LPIS more than 1000 ha	364	55.8%
Sum		**653**	

(Source: own processing, LPIS – land parcel identification system)

In order to access the income situation of the farmers, it is necessary to select the appropriate income variable. The European Commission defines the income as the sum of all revenues the farmer receives, including any form of public support, deducting input costs. However, there are several income variables than might be used in the analysis of potential implementation of IST, such as net farm income (El Benni *et al.*, 2016), profit margin (Liesivaara *et al.*, 2012), net value added (Pigeon *et al.*, 2012) and others. In the paper we use the Gross farm income as the income variable to identify the farms that could have received the potential indemnification from CAP, if the Income stabilisation tool had been implemented in Slovakia. 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 agroturism, plus the subsidies of non-investment character, deducting the input costs. The input costs are recorded in the account consumption of material, energy and other non-storable supplies and include the costs of fuels, electricity, seeds and seedlings, fertilizers and pesticides, crop protection products, purchased feeds for animals, and total intermediate consumption. The other costs such as wages, rent and interest paid are not taken into account.

3. RESULTS AND DISCUSSION

In order to access the income instability of Slovak farms, and their potential financial compensation of loss, we focused on the income variable – gross farm income (GFI). Firstly, it is necessary to calculate the reference income, as the 3-year average of annual income, and subsequently to quantify the difference between the reference GFI and actual one, in the relevant year (2012-2017). If the difference (loss) exceeded 20%, the farmer could have been indemnified to the maximal level of 70% compensation of the loss in the certain year. The threshold rate 20% can be applied for Income stabilization tool since the Agricultural Omnibus from the January 1st 2018, when the amendment of the Regulation (EU) n°1305/201, Article 36 – 39 has been stated. The initial requirement for income loss was lowered from 30%. In the paper, we take into account both scenarios, and identify farms with more than 20% loss or 30% loss. As the reference GFI is recalculated for each individual period, it is possible that the number of identified farms would differ, if the farmers were indemnified in the previous year. In each year, the percentage share of instable farms and the amount of potential indemnification are analyzed. The results are presented in Table 2.

Table 2. The farms eligible for the IST compensation

Years	Number of farms with income loss exceeding		Share of farms with income loss exceeding		Median	Max	Min	The indemnification in thous. EUR	
	20% (count)	30% (count)	20%	30%	(€)	(€)	(€)	20% threshold (€)	30% threshold (€)
2012	144	95	22.1%	14.5%	135 933	962 830	10630	26 195 964	19 653 040
2013	112	59	17.2%	9.0%	137 740	736 526	13765	20 881 238	12 971 121
2014	170	100	26.0%	15.3%	157 385	1576237	10538	37 442 077	27 806 668
2015	93	50	14.2%	7.7%	151 210	1730 838	4087	19 232 809	12 960 661
2016	100	52	15.3%	8.0%	157 582	1578 112	6047	23 181 934	17 721 007
2017	72	49	11.0%	7.5%	152 337	707 448	5859	14 018 409	11 069 947

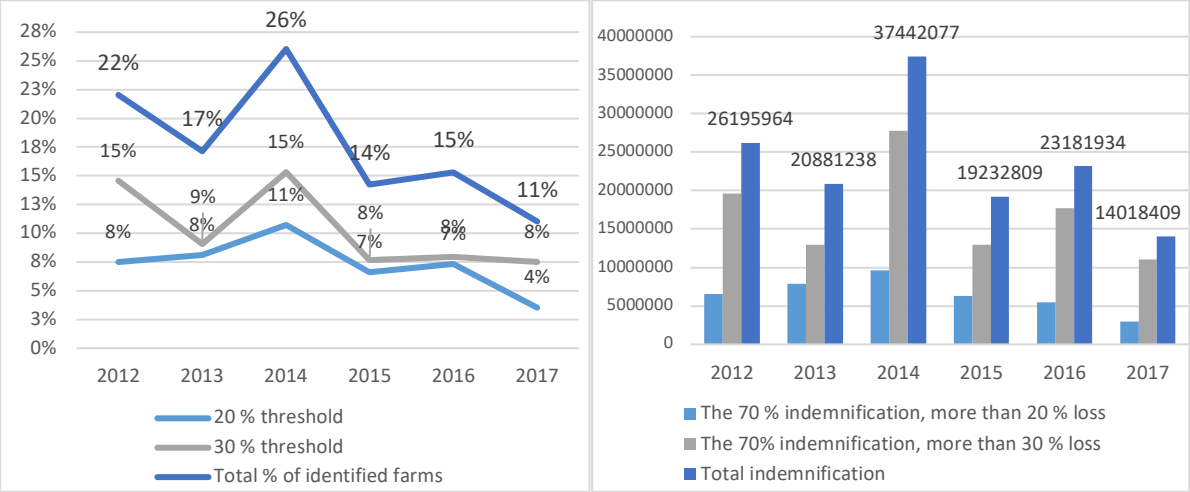
(Source: own processing, adjusted from Boháčiková et al. (2020)

It is not possible to take into account the costs of establishing the Income stabilisation tool fund, as well as the initial contribution of participating farmers. The European Commission allows the Member States to create the own rules in the implementation of the risk management tools to the national policies. In Slovak Republic, the IST has not been implemented so far, therefore the further data and information about the realization of tool in practice are missing. The Income stabilisation tool belongs to the 2014-2020 Common Agricultural Policy and can be applicable since 2014. In the paper, we analyse the longer period, to be able to compare the results and examine the development.

In the year 2012, 22.2% of farmers reached the level of more than 20% loss in comparison to the 3-years average annual income, and could have been indemnified with 26.2 mill. EUR in the case of 70% loss coverage. The number of farms exceeding the 20% loss level has the declining character during the following years, except for the 2014, when the highest number of farms (170) was identified. The financial compensation from the IST in that year would have reached around 37.5 mill. EUR. The lowest number of farms (11%), as well as lowest level of indemnification required (11 mill. EUR) was found in 2017. The change of threshold from 30% to 20% seems to be step forward in risk management, given the potential ability to support

more farmers in loss coverage. In the years 2015 and 2016 the changed threshold rate caused almost doubled number of identified farmers.

Figure 1. The farms reaching the loss level for IST indemnification



(Source: own processing, adjusted from Boháčiková et al. (2020), value of indemnification expressed in EUR)

Table 3. Differences in legal form and production orientation

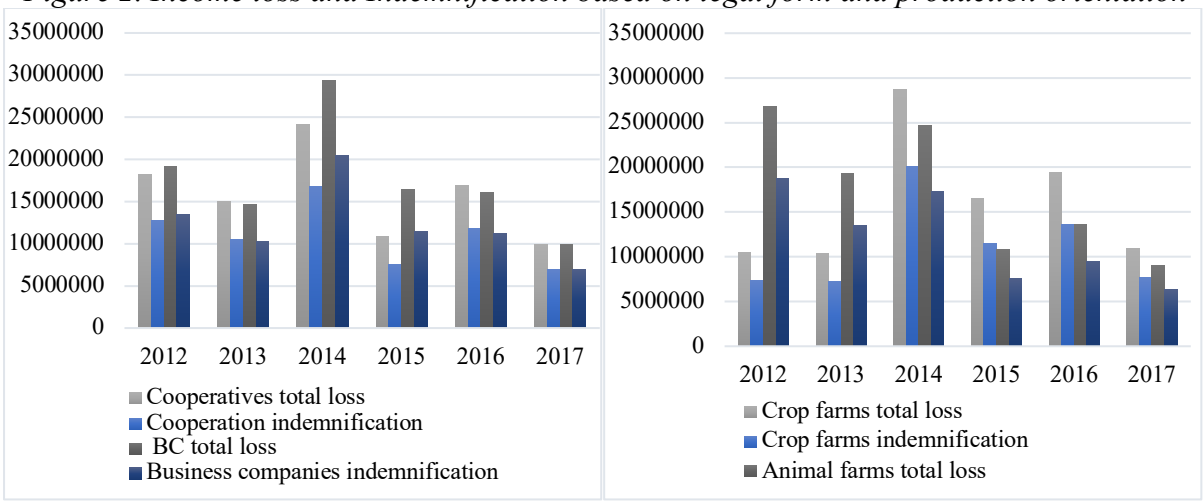
	All farms	**Cooperatives**				**Business companies**			
Year	Count	Count	Share	Total loss	Potential indemnification (€)	Count	Share	Total loss	Potential indemnification (€)
2012	144	66	46%	18243791	12770653	78	54%	19179015	13425311
2013	112	53	47%	15086101	10560271	59	53%	14744238	10320967
2014	170	74	44%	24127706	16889394	96	56%	29360976	20552683
2015	93	40	43%	10972063	7680444	53	57%	16503379	11552365
2016	100	52	52%	16970986	11879690	48	48%	16146062	11302244
2017	72	35	49%	10003287	7002301	37	51%	10023012	7016108
		Crop farms				**Animal farms**			
		Count	Share	Total loss	Potential indemnification (€)	Count	Share	Total loss	Potential indemnification (€)
2012	144	44	31%	10571683	7400178	100	69%	26851123	18795786
2013	112	35	31%	10467477	7327234	77	69%	19362862	13554004
2014	170	82	48%	28748753	20124127	88	52%	24739929	17317950
2015	93	51	55%	16550314	11585220	42	45%	10925127	7647589
2016	100	57	57%	19491070	13643749	43	43%	13625978	9538185
2017	72	35	49%	11002097	7701468	37	51%	9024202	6316941

(Source: own processing)

For the deeper analysis, the farms are divided according to their legal form and production orientation. The table 3 presents the count, % share of farms experiencing an income loss exceeding 20%, the total loss, and the value of indemnification in the case of 70% coverage. There is not significant difference in the number of farms with more than 20% loss of average annual income according to the production orientation. Almost half of the farms are cooperatives and the other one, business companies. Also the level of total loss does not show the comparable differences. It seems, that the character of legal form does not play the role in income situation, as it used to be in Slovakia in previous years.

The comparison of farms, having more than 20% income loss over the years, and thus the opportunity to gain the financial contribution from IST, according to the production orientation shows, that in 2012 and 2013 almost 70% of identified farms were the animal farms. During those years the crop agriculture was more profitable and stable, than the animal farmers. The indemnification required to cover the 70% of loss would have been around 7.5 mill EUR for crop farms, and almost 18.9 mill EUR for animal farms in 2012. In 2013 the percentage share of crop and animal producers remains the same, however the total loss and the compensation differs. Since 2014, after the new CAP programming period, the significant differences between groups have been smoothened. Approximately, half of the identified farms are the crop producers and the second half the animal. It is remarkable, that regardless the number of farms suffering the loss exceeding 20% (if the majority is crop or animal) the crop farmers experienced higher total loss, and thus would have need higher indemnification in each year since 2014 till 2017.

Figure 2. Income loss and Indemnification based on legal form and production orientation



(Source: own processing, value of indemnification expressed in EUR)

The Figure 2. shows the differences in production orientation and legal form of farms experiencing more than 20% income loss over the period 2012-2017. The lines indicate the % share of farmers eligible for compensation, and the bars indicate the total loss and the required financial contribution from the Income stabilisation tool fund, if it was implemented in Slovak agriculture. In the year 2017, only 72 farms would have obtained the loss coverage in the total amount of 14 mill. EUR, which is the most positive result from all the selected years. The total loss reached the lowest value, in both crop and animal producers.

4. CONCLUSION

The Income stabilisation tool belongs to one the risk management tools of Common Agricultural Policy, introduced in 2014-2020, aimed at compensating farmers for the negative effects of price volatility and income drops. The tool can be implemented by any EU-Member State to provide up to 70% compensation of more than 20% income loss compared to the 3-years average annual income, or 5-years Olympic average. The paper focused on the identification of instable farms in Slovak agriculture, experiencing more than 20% or more than 30% loss (previous threshold) during the period 2012-2017. The farms are analysed separately based on the production orientation and legal forms. Both characteristics show only small differences on the in the percentage of eligible farms for compensation. In the paper, we calculated the total loss and the total required indemnification (70% coverage of loss), if the tool had been implemented in Slovakia. The reference income variable, the *Gross farm income*, has been selected as the most suitable from the point of available data, and EU definition of income from farming.

The CAP allows the Member states to define the own rules for the constitution and management of the IST fund, particularly for the granting of compensation payments to farmers. The countries should firstly 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. None of the EU countries has been using the tools to mitigate the income agricultural risk for now. Even though the millions of EUR could have been refunded to farmers to improve their welfare. The main reason of the unsuccess of the IST are many obstacles and uncertainties in implementation. The guideline is very vague and insufficient, the income definition and income variable choice is confusing, there is an inconsistent accounting system in EU countries, and problem with appropriate monitoring of individual farms. One of the conditions is the creation of IST fun with the active participation and initial contribution of farmers, that may be considered with unwillingness. 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 (EC, 2017). To be able to encourage the risk management in Slovak agriculture, it is important to pay attention to the education of farms in this field, dissemination of knowledge about abilities for risk mitigation, support of risk management tools from the government, as well as the focus of scientific research on the potential effects on agriculture business.

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