

**The CAP and national priorities  
within the EU budget  
after 2020**





INSTITUTE OF AGRICULTURAL  
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# The CAP and national priorities within the EU budget after 2020

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## 8. The adoption of agricultural insurance to manage farm risk: preliminary evidences from a field survey among Italian and Polish farmers<sup>1</sup>

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### **Abstract**

Among EU Member States, Italian and Polish agriculture recorded the highest number of farms with income losses, due to adverse climatic events and market related risks. In line with its primary challenge of managing risk in agriculture, the Common Agricultural Policy encourages farmers' adoption of risk management tools as insurance, which covers against production losses due to many different risks. However, the success of this instrument seems to be very heterogeneous and the efforts to examine this are still limited in the literature. This paper provides some preliminary insights from a field survey among farmers in Poland and Italy. In particular, differences in behavioural aspects (e.g. perceptions, preferences) related to risk at farm level and insurance tool were investigated, showing some differences between producers in these two EU Member States.

**Keywords:** risk management, insurance scheme, Common Agricultural Policy, risk perception

**JEL codes:** G32, Q18

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<sup>1</sup> Article prepared for the 23<sup>rd</sup> IAFE-NRI International Conference “The CAP and national priorities within the EU budget after 2020” organized by IAFE-NRI, 11-13 June 2018 in Lidzbark Warmiński, Poland. This research is linked to the Project “Strengthen farms resilience to market volatility through the implementation of the Income Stabilisation Tool (IST) under the CAP Post-2013” (CPDA153138) financed by the University of Padova.

## 8.1. Introduction

Risk is an inevitable element of any economic activity. In the case of agricultural production risk is particularly complex, not only due to the scale of threats and fragmentation of production entities, but also due to the inherent unpredictability of the underlying phenomena. Indeed, when planning the production process farmers are never able to predict its final results and may not guarantee the expected level of income. Indeed, producers may obtain lower income than they had anticipated or even no income at all. At the same time, crises caused by weather anomalies or animal diseases occur with considerable frequency. To stabilize their yields and revenues, farmers can adopt different strategies (both self-coping strategies and specific risk management tools).

The EU has historically addressed the problem of the protection of farmers' income through the organization of the agricultural market. Over the period from 2014 to 2020, the European Commission has emphasized the important role of subsidized risk management tools in the 2<sup>nd</sup> Pillar of the Common Agricultural Policy [Pawłowska-Tyszko, 2017; Trestini and Giampietri, 2018]. In accordance with the Articles 36-39, the EU Regulation No. 1305/2013 includes:

- Crop insurance subsidies, applicable in the case of losses caused by adverse weather phenomena, incidence of animal or plant disease, or pest infestation;
- Mutual funds providing financial compensation to farmers for losses caused by animal or plant disease or an environmental incident;
- THE Income Stabilisation Tool (IST), providing financial compensation to farmers experiencing a serious depletion of income;
- In particular, insurance schemes are used to transfer the risk to another entity. In addition to several countries worldwide as USA, Japan, Canada or Brazil, subsidized insurance programmes exist in many EU Member States such as Spain and Italy [Dubiel, 2014].

Since 2008, Polish farmers have the obligation to purchase subsidized insurance contracts for crops and animals, in order to be eligible to receive direct payments and state aid to remedy losses caused by natural disasters. In particular, farmers must insure at least 50% of their cropped area against damage caused by flood, drought, hail, adverse overwintering results and late frosts [Pawłowska-Tyszko and Soliwoda, 2017]. Moreover, insurance has to cover at least one risk indicated by the legislator as compulsory. Farmers who do not fulfil this obligation are required to pay a fee of EUR 2 per hectare for each calendar year. In reality, as a consequence of such a low fee for failure to purchase insurance along with relatively low effectiveness of the obligation execution, still a small percentage of farmers insure their crops [Wąs and Kobus, 2018]. Indeed, as it results from other studies [Sulewski and Drożdż, 2012; Śmiglak-

-Krajewska, 2014; Jerzak et al., 2015; Kurdys-Kujawska and Sompolska-Rzechula, 2018], Polish farmers take out insurance policies to a very limited extent. As stated by Was and Kobus [2018], in 2013 only 10.8% of Polish farmers stipulated insurance contracts, covering only a small amount of agricultural land (23.88%). Conversely, over the last years there has been a high increase in state budget subsidies to crop insurance in Poland: from PLN 125 million (EUR 29 million) in 2011 to PLN 900 million (EUR 208 million) in 2017 [Biernat-Jarka and Pawłowska-Tyszko, 2018]. In 2005-2012, the yearly rate of state-subsidized crop insurance contracts was around 141 thousand. Insurance companies in Poland themselves are not very interested in participating in this scheme, due to its low profitability: since the beginning of the crop insurance subsidy system only three companies (i.e. PZU S.A., TUW and Concordia) have had such insurance in their regular offer.

In Italy, the participation in insurance has been enhanced by national subsidies dating back to 1970, with the creation of the National Solidarity Fund (reformed in 2004). Later, with the Health Check, European reserves have been added to national funds to support insurance premiums. Although the higher level of subsidies addressed to insurance compared to the other two instruments (i.e. mutual funds and IST), currently farmers' participation remains not optimal, showing also a remarkable North-South imbalance: in 2017, the 81% of the total insured value and 86% of the total insured area was in the North, whereas 10% and 8%, respectively, in central Italy and 9% and 6% in the South [ISMEA, 2018]. Moreover, over the period from 2010 to 2015, the number of insurance contracts decreased by 20%, whereas the rate of insured agricultural areas remained almost equal.

This paper proposes a qualitative comparison between an Italian and a Polish sample with regard to some major aspects related to farmers' decision making concerning insurance adoption at farm level. To this purpose, this study provides some descriptive information from a field survey in these two EU Member States that, according to some recent EU policy statistics<sup>2</sup> and recent literature (for Italy, see for instance Trestini et al., 2017), registered the highest number of farms suffering severe income drops over the last years.

## **8.2. Data and methodology**

Data were collected from a field survey started in December 2017 with direct interviews among 140 farmers: 70 in Italy (Veneto region) and 70 in Poland (Wielkopolska Voivodeship). The questionnaire was designed based on both the

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<sup>2</sup> European Commission (2017). Risk management schemes in EU agriculture Dealing with risk and volatility. EU Agricultural Markets Briefs No. 12, September 2017. Available on: [http://ec.europa.eu/agriculture/markets-and-prices/market-briefs/index\\_en.htm](http://ec.europa.eu/agriculture/markets-and-prices/market-briefs/index_en.htm).

existing literature and a preliminary survey among 22 Polish farmers and 23 Italian farmers, and pre-tested on a small sample of respondents. All the variables were measured with a 5-point Likert scale statements. More in depth, the questionnaire investigated what follows: farmer's perceived income (3 items) and production (3 items) risks at farm level; subjective risk attitude (6 items); growers' perceived frequency, impact and control over some specific risks at farm level (i.e. frost, storm, hail, heavy rain, severe drought, animal disease, plant disease, pest infestation, severe drop of market prices); producers' preferred self-coping strategies among several options that originated from the literature; perceived knowledge and availability of the insurance tool, and the perceived trust (3 items) towards the intermediaries that are somehow responsible for the insurance uptake; farmers' subjective intention to adopt insurance in the near future at farm level; finally, the perceived barriers to insurance adoption. Mean values are described in the next paragraph and a T-test was carried out in order to show statistically significant differences between the samples.

Table 1 reports some descriptive statistics related to the Italian and Polish sample. Male and young farmers represent the majority in both samples, with average revenue per year lower than EUR 50,000. Conversely, farm utilised agricultural area is notably different between the two samples, with very small farms in Italy (14 hectares on average) compared to Poland (142 hectares). Moreover, the majority of Italian farms are specialized in permanent crops (50%), whereas the mixed type (livestock and crops) prevails in the Polish sample (69%).

Table 1. Descriptive statistics of the Italian (N=70) and Polish sample (N=70)

Categories	Description	ITALY				POLAND			
		N.Obs	%	Mean	SD	N.Obs	%	Mean	SD
Gender	(0) female	24	34.3			25	35.7		
	(1) male	46	65.7			45	64.3		
Age (years)	(1) less than 35	32	45.7			39	55.7		
	(2) 35-44	19	27.1			16	22.9		
	(3) 45-54	9	12.9			10	14.3		
	(4) 55-64	7	10.0			5	7.1		
	(5) more than 65	3	4.3			-	-		
Average farm revenue (gross income from farming/year)	(1) less than 50,000	40	57.1			44	62.9		
	(2) 50,000 - 100,000	21	30.0			21	30.0		
	(3) 100,000 - 250,000	7	10.0			4	5.7		
	(4) more than 250,000	2	2.9			1	1.4		
Utilised agricultural area	number of hectares			13.9	18.2			141.8	815.2
Farm type	Crop	19	27.1			22	31.4		
	Permanent crop	35	50.0			-	-		
	Livestock	9	12.9			-	-		
	Mixed	7	10.0			48	68.6		

Source: own elaboration [2018].

### 8.3. Results

Looking at the average values that our respondents assigned to the statements in the questionnaire, we find mean values that are above the scale mean, showing that farmers are risk averse. In particular, Italian farmers are significantly more risk averse than Polish ones (Table 2). Moreover, the Italian growers perceive a higher production risk than Polish, conversely to income risk (for which the difference was not statistically significant).

Table 2. Risk attitude, perceived income risk and perceived production risk

	ITALY		POLAND		Sig. <sup>a</sup>
	Mean	SD	Mean	SD	
Risk attitude	3.35	1.10	3.00	0.50	***
Perceived income risk	3.53	1.03	3.70	0.17	
Perceived production risk	3.52	1.04	2.80	0.50	***

Note: <sup>a</sup>T-test for comparison of mean values between the Italian and the Polish sample: significant difference between mean values at 1% level (\*\*\*), 5% level (\*\*) and 10% level (\*).

Source: own elaboration [2018].

Table 3. Perceived risk frequency, risk impact and risk control at farm level

		Frost	Storm	Hail	Heavy rain	Severe drought	Animal disease	Plant disease	Pest Infestation	Severe drop of market prices
<b>RISK FREQUENCY</b>										
ITALY	Mean	3.77	3.61	4.17	3.53	3.84	2.90	3.86	3.96	3.63
	SD	0.97	1.07	0.88	1.11	1.04	1.35	0.95	0.91	1.09
POLAND	Mean	4.57	3.61	4.03	3.93	4.21	3.29	3.63	3.06	3.60
	SD	0.50	0.98	0.87	0.95	0.68	1.25	1.11	1.02	1.13
Sig. <sup>a</sup>		***			**	**	*		***	
<b>RISK IMPACT</b>										
ITALY	Mean	3.54	3.09	4.01	3.23	3.54	2.74	3.60	3.66	3.97
	SD	1.29	1.20	1.21	1.17	1.25	1.51	1.22	1.31	1.06
POLAND	Mean	4.53	3.59	4.13	3.97	4.40	3.10	3.36	3.33	3.71
	SD	0.50	1.00	0.87	0.76	0.52	1.41	1.27	1.25	1.36
Sig. <sup>a</sup>		***	***		***	***				
<b>RISK CONTROL</b>										
ITALY	Mean	2.14	2.13	2.26	2.03	2.94	2.57	3.11	3.17	2.10
	SD	1.25	1.25	1.42	1.19	1.30	1.35	1.22	1.18	1.16
POLAND	Mean	1.36	1.27	1.26	1.53	1.70	3.17	3.66	3.01	2.21
	SD	0.78	0.59	0.53	0.81	0.91	1.08	0.78	1.06	1.20
Sig. <sup>a</sup>		***	***	***	***	***	***	***		

Note: <sup>a</sup>T-test for comparison of mean values between the Italian and the Polish sample: significant difference between mean values at 1% level (\*\*\*), 5% level (\*\*) and 10% level (\*).

Source: own elaboration [2018].

Table 3 shows that for the Italian sample hail risk is perceived as the most frequent at farm level, followed by pest infestation and plant disease, whereas for Polish farmers frost is the most frequent risk, followed by severe drought and hail; in addition, we find very similar values between Italy and Poland for storm and severe drop of market price risks. With regard to the impact at farm level, generally

speaking the most important risks for the Italian sample are hail and drops in market prices, whereas for Polish sample it is frost followed by severe drought. Moreover, Italian farmers state to have the highest risk control for pest infestations and plant diseases, while Polish farmers for plant and animal diseases. Interestingly, we notice an interesting and statistically significant (at 1% level) difference in farmers' perception of severe drought control between the two samples, with Italian managing this risk better than Polish farmers.

Among the available self-coping strategies to manage risk at farm level, Table 4 shows the highest preference of the Italian sample for the modernization through investments (that aim at making the farm more competitive). Conversely, on average Polish farmers mainly prefer the use of fertilizer. More in depth, among the strategies linked to the market both samples prefer the improvement of production quality, followed by organic production and direct selling in Italy and by direct selling in Poland. With regard to technical strategies, Italian farmers prefer modernization followed by irrigation, whereas Polish farmers prefer the use of fertilizer followed by farm modernization. Crop diversification is the most preferred management strategy both in the Polish and the Italian sample. Finally, among the financial strategies to manage risk at farm level, the Italian sample seems to prefer to avoid loans, whereas the Polish sample prefers the strategy of money saving; in both samples, receiving the EU payments represents the second best financial option for self-coping risks.

Table 4. Preferred self-coping strategies at farm level

Category	Self-coping strategy	ITALY		POLAND		Sig. <sup>a</sup>
		Mean	SD	Mean	SD	
Market	Production contracts	3.09	1.11	3.96	0.67	***
	Organic production	3.60	1.16	2.90	0.97	***
	Improving the quality of production	4.01	1.01	4.07	0.69	
	Direct selling	3.60	1.13	3.97	0.78	**
Technical	Irrigation	3.90	0.90	3.94	0.68	
	Use of pesticides	2.80	1.15	3.93	0.86	***
	Use of fertilizer	3.20	1.07	4.20	0.63	***
	Investments (i.e. structural/technological modernization)	4.10	0.85	4.19	0.67	
Management	Crop diversification	3.79	0.96	4.06	0.70	
	Diversification of farm activities	3.53	1.13	3.93	0.69	**
	Increasing off-farm incomes	3.56	0.94	3.79	0.95	
	Increasing the level of production	3.60	1.07	3.63	1.02	
Financial	Financial hedging (e.g. future contract)	3.59	1.03	3.57	0.86	
	Money savings for times of financial hardship	3.77	0.92	4.04	0.79	*
	Avoiding loans	3.96	1.08	3.21	1.05	***
	The EU direct payment	3.79	1.01	3.94	0.81	

Note: <sup>a</sup>T-test for comparison of mean values between the Italian and the Polish sample: significant difference between mean values at 1% level (\*\*\*), 5% level (\*\*) and 10% level (\*).

Source: own elaboration [2018].



As shown in Table 5, Polish farmers demonstrate a higher knowledge of the insurance tool mechanisms and perceive this as an available tool on the market to manage risk more than the Italian farmers of our sample; coherently, also the intention to adopt insurance at farm level is higher for Polish farmers. Furthermore, the two samples show similar values of positive trust towards the intermediaries on average.

Table 5. Perceived knowledge and availability of insurance tool, perceived trust towards the intermediaries, and intention to adopt insurance tool

	ITALY		POLAND		Sig. <sup>a</sup>
	Mean	SD	Mean	SD	
Perceived knowledge	2.71	1.16	3.81	1.09	***
Perceived availability	3.06	0.98	3.94	0.98	***
Trust	3.01	0.89	3.07	0.18	
Intention to adopt	3.64	1.04	3.87	0.99	

Note: <sup>a</sup>T-test for comparison of mean values between the Italian and the Polish sample: significant difference between mean values at 1% level (\*\*\*), 5% level (\*\*) and 10% level (\*).

Source: own elaboration [2018].

The high costs of insurance, followed by the absence of adequate information and the scarce transparency about the functioning mechanisms represent the major barriers to insurance adoption among farmers in both samples (table 6), showing higher values for the Italian sample. Finally, the excess of bureaucracy also represents a perceived barrier to insurance adoption, especially for Italian farmers.

Table 6. Perceived barriers to insurance adoption

Barrier type	ITALY		POLAND		Sig. <sup>a</sup>
	Mean	SD	Mean	SD	
Excess of bureaucracy	3.36	0.98	2.64	1.27	***
No adequate information	3.69	1.03	3.26	1.06	***
Scarce perception of benefits	3.30	1.13	3.04	0.84	
Low transparency	3.49	0.96	3.09	0.86	***
Difficult management	2.93	1.05	2.66	0.78	*
High costs	3.81	0.92	3.54	0.93	*

Note: <sup>a</sup>T-test for comparison of mean values between the Italian and the Polish sample: significant difference between mean values at 1% level (\*\*\*), 5% level (\*\*) and 10% level (\*).

Source: own elaboration [2018].

#### 8.4. Summary and conclusions

As insurance uptake is still scarce in Italy and Poland (compared to the levels desired by policy makers), the understanding of the antecedents of the decision to adopt such tool represents a core research issue and the objective of a wider research in which this study takes part [Trestini et al., 2018]. In line with this, this paper highlights some interesting descriptive information regarding some main differences between behavioural aspects in the two considered countries. Albeit the results are not representative of the two populations, they repre-

sent an important source of preliminary evidence that derive directly from a filed investigation. First of all, the results demonstrate a higher perceived risk for hail in Italy and for frost in Poland. Interestingly, we notice a higher control for drought risk for the former, compared to Poland where such risk registers a high impact, and this is probably due to the traditional water management in the Italian agricultural sector. Looking at the possible self-coping strategies available for farmers to manage risk at a farm level, we notice a higher preference for organic production for Italian producers compared to Polish farmers, thus denoting an acceptable value added recognition (in terms of farm revenues) by the market. Conversely, the Polish sample prefers the use of technical inputs. Generally speaking, the Italian sample shows a higher perception of barriers to insurance adoption, whereas the Polish sample shows a higher knowledge and availability of the insurance tool in the market and a higher intention to adopt it in the future. It follows that probably more information campaigns should be targeted to increase the number of insurance adopters, especially in Italy.

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