

THE MOST IMPORTANT AGRICULTURE RISK. THE RISK CULTURE

Gheorghe HURDUZEU¹
Cătălin HUIDUMAC²
Raluca HURDUZEU³

ABSTRACT

The paper makes a short review of the agricultural risks in Romania. Through this research we want to rally to the latest concerns in the field worldwide, motivated by several reasons: 1) the role that agriculture plays in the Romanian economy and society; 2) the growing importance of the agricultural risks; 3) high volatility of yields, costs, prices, revenues and losses at farm level generated by these risks; 4) the fact that the risk defined as such, evaluated may constitute an essential element for the businesses in the agriculture; 5) in this context, 'the risk culture' with all it stands for, partially substitutes itself to physical crops. A solid culture of risk supposes the farmers' awareness of the sources and manifestations of these risks, and the ways these risks may be properly managed, with significant effects on the profit of the business.

KEYWORDS: *agriculture, risks, loss, production, average production, price, risk culture.*

JEL CLASSIFICATION: *G10, G14, G15, G22*

1. THE AGRICULTURAL RISKS IN ROMANIA – A BRIEF OVERVIEW

In Romania, the importance of agriculture as a sector of activity is given by the country's agricultural potential. According to the 2010 Agricultural Census (EUROSTAT, 2010), the total area of agricultural land in Romania is 15.9 million hectares, of which around 13.3 million ha (approximately 56% of total territory) is currently being used – so-called Utilised Agricultural Area (UAA). Out of the total UAA: 8.3 million ha (62.4%) is arable land, 4.5 million ha (33.9%) is permanent grassland and meadow, 0.3 million ha (2.3%) is permanent crops, and 0.2 million ha (1.4%) is kitchen gardens.

Cereal grains, particularly maize and wheat, are the most important crops occupying around 60% of all arable land, followed by potatoes, sugar beet and industrial crops. Romania is known for its vegetable production, with tomatoes, onions, cabbages and peppers among the crops grown. Orchards and vineyards are also important.

The overall pattern of land use and agricultural production in Romania is not significantly different from that observed across the EU-28. However, the main characteristics of the Romanian agriculture which set it apart from other Member States is a) its highly polarised structure, and b) the huge number of small-scale farms. There are a total of 3.86 million agricultural holdings in Romania, of which 96.6% fall into this "small-scale, subsistence farm" sub-sector. These small farms provide an important socio-economic buffer and basic livelihood for a significant proportion of the rural population.

Compared to other EU Member States, the agricultural sector in Romania is an extensive sector occupying 59.8% of total territory and providing a home to 44.9% of the total population. A relatively high proportion of the National Gross Added Value (32.4%) and employment (41.5%) is also generated in the rural areas.

¹ The Bucharest University of Economic Studies, Romania, geohurduzeu@gmail.com

² The Bucharest University of Economic Studies, Romania, catalinhuidumac@yahoo.com

³ The Bucharest University of Economic Studies, Romania, rehurduzeu@gmail.com

European farmers are subject to increasing agricultural market and production risks. They are facing growing price volatility due to changes in the European Union's Common Agricultural Policy (CAP) at the time when production is being affected by a surge in adverse climate events and spread of diseases globally (Cordier 2013).

Within this context, the agricultural sector in Romania is characterised by a strong exposure to risk. Our country has a growing vulnerability in intensity and frequency of climate extremes (drought, flood, heat, etc.), which cause significant losses, especially in agriculture (Hurduzeu et al. 2014). Thus, the risk exposure is still likely to increase. Therefore, it is vital to determine how farmers perceive the importance of risk factors surrounding their activities as this strongly influences their risk management strategies (Székely and Pálincás 2009).

2. MATERIALS AND METHODS

Studiul de fata abordeaza sectorul vegetal (culturi agricole) si nu se refera si la sectorul animalier. "The risk culture" in agriculture requires farmers' awareness of the risks they face in their activity, the sources and manifestations of these risks, as well as the methods by which these risks can be managed. We may say that this culture (risk culture) has demonstrated its importance lately. The farmers who have a robust culture have managed easier the risks by identifying the sources of major risks long before the time of their appearance, as well as their efficient and timely coverage the financial results being superior.

An efficient market and a culture for agricultural risk is crucial not only for farms but for the firms participating in the food supply chain, banks, insurers and for consumers. It is also important for the society as a whole, as the risk-averse behaviour of the farmers can lead to an inefficient allocation of farm resources, resulting in a sub-optimal overall allocation of resources and consequently to lower overall welfare (Székely and Pálincás 2009).

To take a risk is to expose oneself to a possible injury or loss. For many decisions, risk is unimportant, since the probability of a loss is small and/or the probability of suffering that loss is considered to be low. However, in order to withstand adverse outcome and to avoid jeopardising the existence of an enterprise as the base for income generation, risk must be managed effectively, within the capacity of the individual, business or group (Hardaker, Huirne and Anderson 1997).

The awareness of the existence and manifestation of risk, the identification, the phasing and finding the most effective forms of protection involved covering a rich specialized literature.

In the present study we used the Hardaker, Huirne and Anderson 1997; USDA 1999 (see, Risk Managerial Tools for EU Agriculture, EUROPEAN COMMISSION, 2001) approach. According to this research the most important risks may be classified as follows:

Human or personal risks relate to death, illness or injury of the farm operator and/or its labour force. These risks are common to all business operators and employees.

Asset risks are those associated with theft, fire and other loss or damage of equipment, buildings and other agricultural assets used for production.

Production or yield risks are often related to **weather** (excessive/insufficient rainfall, hail, extreme temperatures). Yield risk is measured by yield variability, the randomness relative to the mean value in a yield series.

Price risks is the risk of falling output and/or rising input prices after a production decision has been taken.

Institutional risk is the risk associated with changes in the policy framework (agricultural and other policies) which intervene with production and/or marketing decisions and in the end negatively affect the financial result of a farm. Institutional risks also include contracting risk, e.g. the risk of breach of contract.

Financial risks include rising cost of capital, exchange rate risk, and insufficient liquidity.

For the methods of risk reduction, the literature is comprehensive, we mention here only several classifications: informal mechanism/formal mechanism (Hess, Skees, Stoppa, Barnett and Nash, 2005), market risk mechanism/production mechanism (Cordier, 2013, Cordier, Hurduzeu, 2014), public risk management tools/market-based risk management tools (Schaffnit-Chatterjee, 2010) etc. The tools for risk management in agriculture can be either on-farm strategies (diversification of production programmes, stabilization or self-insurance funds, etc.) either risk-sharing strategies like marketing contracts, production contracts, hedging on futures markets, or the participation in insurance, mutual insurance or regional mutual schemes (Cordier, Hurduzeu, 2014).

Based on the current situation of the Romanian agriculture we have considered a number of 6 instruments considered to be the most appropriate and handy for the Romanian farmers to protect themselves against the risks outlined above. These were: Insurance, Diversification, Marketing contracts, Production contracts, Vertical integration, Hedging.

The research methodology was a questionnaire survey based on the research of Malhotra, 1999; Lehtonen and Pahkinen, 2004; Chambers and Skinner, 2003; Székely, C. and Pálinkás, P. 2009.

We followed three main objectives: (i) evaluation of the farmers' risk perceptions (ii) the evaluation of the risks' distribution; (iii) to identify specific risk reduction methods applied by the Romanian farmers.

The reserach took place during May-September 2014, the questionnaire was sent online to a farmers owning at least 100 ha of farmland. Following a sampling plan elaborated by the authors the respondents were chosen. Stratified sampling with proportional allocation was used as the sampling method for the questionnaire survey. We decided that 100 answers are relevant.

The research objectives were defined in the questionnaire, but were not communicated to the interviewed farmers.

For the first objective, the risk factors were rated from 1 (this factor has no effect on farming) to 6 (this factor has a major effect on farming). For the second objective, the distribution of ratings of risk factors in the case of risk factors, we used three criteria (no/moderate/high effect), and for the third a number and % of respondents using the instrument. We mention that we selected the instruments considered of market type (used at farmers' initiative) and not the ones of public safety nets which have a governmental provision of support to agriculture in case of catastrophic events, as a measure to ensure social stability (both from a consumer's and/or a producer's point of view).

3. RESULTS

3.1. The Romanian farmers' perceptions of agricultural risk

Farming activity is influenced by a variety of factors prevalent in agriculture. Some factors may be either beneficial for farmers; for example, political measures may prove positive or detrimental. Farmers' subjective judgments on these factors also determine the resources and effort devoted to offset risks. In our survey farmers were asked to subjectively rate some of these factors (Table 1). Factors could be rated from 1 (factor has a low effect on farming) to 6 (factor has a major effect on farming).

Table 1. Rating sources of risk (country averages; 1-2: low, 3-4: moderate, 5-6: large effect)

		Romania Mean Greater than	Rang
1.	Human or personal risks	1.79	5
2.	Asset risks	1.56	6
3.	Production or yield risks	5.67	1
4.	Price risks	5.55	2
5.	Institutional risk	3.89	3
6.	Financial risks	3.56	4

Source: Authors' own calculations

The respondents considered that the most important risk is the **production risk or yield risks followed by price risks (these risks are considered of large effect)**. The next important is considered to be the **financial risk (moderate risk)**. **The last rankings are for the institutional risk (moderate risk), asset risks and human or personal risks (low effect)**.

We note the fact that the first two risks are considered to be severe with large effect. Thus, the Romanian farmers gave the highest ratings to this factor showing that weather has large effects on farming. The Price risk is given mainly by the price volatility.

As far as the **financial risk, this is** considered moderate and is determined highly by the insufficient liquidity. The institutional risk is considered moderate and it is determined by the changes in the economic and fiscal policy as well as the legal framework (for instance, the law of certificates of deposit, the law on the establishment of mutual fund in agriculture).

The last two risks are perceived as having lower influence (personal or human risks are perceived as being caused mainly by the lack of workforce in critical periods and less related to death, illness or injury of the farm operator and/or its labour force. The **asset risks** (associated with theft, fire and other loss or damage of equipment, buildings and other agricultural assets used for production) are considered the risk with the lowest influence.

3.2. The distribution of ratings of risk factors in case risk factors

Table 2. The distribution of rating of risk factors in case risk factors (% of respondents)

	Effect on farming	Farmers/responders
Human or personal risks	Low	29
	Moderate	58
	Large	23
Asset risks	Low	21
	Moderate	61
	Large	24
Production or yield risks	Low	2
	Moderate	14
	Large	84
Price risks	Low	11
	Moderate	30
	Large	59
Institutional risk	Low	8
	Moderate	45
	Large	47
Financial risks	Low	10
	Moderate	39
	Large	51

Source: Authors' own calculations

As for the perception **Effect on farming** can be seen as:

- i. **Human or personal risks.** From 100 de respondents, 23 considered it large, 58 moderate and 29 low.
- ii. **Asset risks.** From 100 de respondents, 11 considered it large, 18 moderate and 71 low.
- iii. **Production or yield risks.** From 100 de respondents, 84 considered it large, 14 moderate and only 2 low.
- iv. **Price risks.** From 100 de respondents, 59 considered it large, 31 moderate and 10 low.

- v. **Institutional risk.** From 100 de respondents, 29 considered it large, 58 moderate and 13 low.
- vi. **Financial risks.** From 100 de respondents, 42 considered it large, 43 moderate and 15 low.

4. RISK MANAGEMENT STRATEGIES

Out of the responses on the importance and risk distribution it is highly relevant to identify specific risk reduction methods applied by the Romanian farmers.

Table 3. Current use of risk management instruments (number and % of respondents using the instrument)

		Romania % of cases higher than
1.	Insurance	41
2.	Diversification	83
3.	Marketing contracts	72
4.	Production contracts	78
5.	Vertical integration	48
6.	Hedging	6

Source: Authors' own calculations

As far as the agricultural risk management instruments the table above shows that:

- **41 % of the surveyed farmers turn to insurance to cover risks;**
- **83 % of the surveyed farmers resort to diversification;**
- **72 % of the surveyed farmers sign marketing contracts;**
- **78 % of the surveyed farmers sign production contracts;**
- **48 % of the surveyed farmers have vertical integration;**
- **as far the market-based risk management tools like hedging price risk, we note that it is used by few farmers (only 6 farmers).**

These data show that the Romanian farmers try to control risk rather through contracts (production and marketing contracts) and business strategy (diversification and vertical integration) and less by insurance or by operations of a less specific to organized markets (hedging).

CONCLUSIONS

Romania has a significant agricultural potential. In this context, the phenomenon and the manifestation of risk become increasingly prominent for the Romanian farmers, the risks they are exposed to are amplified and the diversified. To what extent can we speak of a culture of risk specific Romanian farmers? In our opinion, the risk culture exceeds the agricultural crop being an element on which farmers must reflect more and more. This culture requires farmers' awareness of the risks they face in their activity, the sources and manifestations of these risks, as well as the methods by which these risks can be managed.

We can say from this study that the Romanian farmers (those of medium and large scale, which are focused on the market and not the ones of the category of subsistence or semi-subsistence) have a high risk level of culture, being aware of its existence, the forms in which they can occur, the possibilities that are available to manage these risks. Certainly, new methods, new techniques but also policies should be implemented by the Romanian farmers to cover these risks. Therefore, there is a culture of risk but it must be cultivated and developed both by public and private tools.

REFERENCES

1. Aaven, T. (2003). *Foundations of risk analysis – A knowledge and decision-oriented perspective*. UK: Wiley.
2. Boehlje, M.; Trede, L.D. (1977). *Risk management in agriculture*. Journal of the American Society of Farm Managers and Rural Appraisers, 41.1. 20-29.
3. Brockett, P.I.; Wang, M.; Yang, C. (2005). *Weather derivatives and weather risk management*, Risk Management and Insurance Review, Spring.
4. Chambers, R. L.; Skinner, C. J. (ed.) (2003): *Analysis of Survey data*. UK: John Wiley & Sons.
5. Cordier, J. (2013). *Assessment of the current agricultural risk management policy in Romania*, November, Document of The World Bank Group.
6. Cordier, J.; Hurduzeu, G. (2014). *Romania – Advisory Services to The Ministry of Agriculture and Rural Development for Strengthening the Agri-Food Sector Strategy Formulation*, Final Report, April, Document of The World Bank Group.
7. Covey, T.; Ahearn, M.; Johnson, J.; Morehart, M.; Strickland, R.; Vogel, S.; Traub, L.; Brown, D.; Mcgath, C.; Williams, B.; Stenberg, P.; Green, R.; Erickson, K.; Harris, M. (2008). *Agricultural Income and Finance Outlook*, USA: USdA.
8. Delefortrie F. (2008). *Etude de la gestion des risques au niveau individuel sur les exploitations*, APCA, Paris.
9. Diaz-Caneja et all. (2009). *Risk Management and Agricultural Insurance Schemes in Europe*, JRC Reference Report.
10. Frame, J. D. (2003): *Managing risk in organizations – A guide for managers*, USA: Jossey Bass.
11. Gallati, R. (2003). *Risk management and capital adequacy*, USA: McGraw-Hill.
12. Hardaker, J. B.; Huirne, R. B. M.; Anderson, J. R. (1997). *Coping with Risk in Agriculture*. UK: CAB International.
13. Harwood, J.; Heifner, R.; Coble, K.; Perry, J.; Somwaru, A. (1999). *Managing Risk in Farming: Concepts, Research, and Analysis*, USA: USdA.
14. Hess, U.; Skees, J.; Stoppa, A.; Barnett, B.; Nash, J. (2005). *Managing Agricultural Production Risk Innovations in Developing Countries Agriculture and Rural Development Department*, Document of The World Bank Group.
15. Hurduzeu et al. (2014). *Hazards and Risks in the Romanian Agriculture Due to Climate Changes*, PROCEDIA Economics and Finance, vol. 8, 346-353.
16. Key, N.; Macdonald, J. (2006): *Agricultural Contracting – Trading Autonomy for Risk Reduction*. Amber Waves. 4.1. pp. 26-31.
17. Rutten, L. (2012). *Innovative agricultural finance and risk management. Strengthening good production and trade in the transition region*, FAO INVESTMENT CENTRE.
18. Székely, C.; Pálkás, P. (2009). *Agricultural risk management in the European Union and in the USA*, Studies in Agricultural Economics No. 109. 55-72.
19. Tangermann, S. (2011). *Risk Management in Agriculture and the Future of the EU's Common Agricultural Policy*, ICTSD Programme on Agricultural Trade and Sustainable Development, Issue Paper No. 34.
20. Vrolijk H.C.J.; de Bont C.J.A.M.; van der Veen H.B.; Wisman J.H.; Poppe K.J. (2009). *Volatility of farm incomes prices and yields in the European Union*, LEI Wageningen UR, The Hague, URL: <http://edepot.wur.nl/11973>.
21. Williams, C. A.; Smith, M. L.; Young, P. C. (1995). *Risk Management and Insurance*, USA: McGraw-Hill.
22. *** OECD (2000). *Income Risk Management, Agriculture and Food*, OECD Books, URL: <http://www.oecd.org/agriculture/agricultural-policies/42750750.pdf>
23. *** OECD (2012). *Livestock Diseases. Prevention, Control and Compensation Schemes*, OECD Publishing. URL: <http://dx.doi.org/10.1787/9789264178762-en>.