

## Introduction to the Special Issue on Risk Behaviour of Market Participants

**Olivier Mahul and Joost M. E. Pennings\***

Risk has been examined for a long time in the field of agricultural economics. Almost all individual and collective decisions are made in an uncertain environment. To understand how market participants respond to risk, economists and psychologists have developed the concepts of risk perception and risk attitude. Risk perception reflects the decision-maker's interpretation of the likelihood of exposure to the content of the risk and is defined as a decision-maker's assessment of the risk inherent in a particular situation. On the other hand, risk attitude reflects the extent to which the decision-maker general or consistently dislikes or likes the risk content.

It is important to emphasise that risk attitude and risk perception are two distinct concepts. If one could quantify a decision maker's risk attitude and risk perception, one could predict his risk behaviour. How decision makers will respond to risk also depends on the risk content. Participants in the marketing channel interact, and this interaction, which may take the form of various contract relationships, can influence the risk content they face and may also influence their risk attitude and risk perception.

How can we manage risk? At the farm level, various risk management instruments have been developed. Commodity futures and options and crop insurance programmes have been heavily researched in the literature regarding their performance in reducing risk and their use by farmers and agribusiness companies. The first paper in this Special Issue, by Garcia and Leuthold, reviews the various aspects of futures and options that have been studied, and makes various suggestions for future research. Garcia and Leuthold consider that one of the topics that needs to be addressed is how the measurement of risk attitude influences our understanding of risk behaviour. Nelson and Escalante address this issue by deriving a constant relative risk aversion (CRRA) location-scale function for modelling choice under uncertainty. They argue that a mean-variance objective function exhibiting well accepted behavioural assumptions (e.g., decreasing absolute risk aversion) can contribute to a fuller exploration of the location-scale approach in agricultural risk management. Numerous factors have been identified that influence trading behaviour in futures and options markets. Tuthill and Frechette investigate under which conditions a risk-averse hedger may be inclined to adopt speculative behaviour in unbiased markets. While this behaviour is not rational under the standard expected

\* Olivier Mahul is a senior insurance specialist at the World Bank and Joost M. E. Pennings is an associate professor in the Department of Agricultural Economics & Consumer Economics at the University of Illinois at Urbana-Champaign, and the AST professor in marketing in the Marketing & Consumer Behaviour group at Wageningen University, The Netherlands.

utility theory, they show that such behaviour can be rationalised under the rank-dependent expected utility theory when the risk averse hedger adopts an optimistic attitude towards risks.

Coble, Miller, Zuniga and Heifner use the expected utility framework to investigate producers' hedging decisions when government-sponsored crop insurance programmes and the loan deficiency programme (LDP) are available. They find strong substitution effects between the price support programme and the demand for hedging. This result is not surprising as price supports act as free put options with yield-contingent hedge ratios. The demand for hedging and insurance is reconsidered in the presence of LDP and the counter cyclical programme (CCP) by Wang, Makus and Chen and by Hauser, Sherrick and Schnitkey. Using an expected utility maximisation model, Wang, Makus and Chen show that hedging and insurance instruments play a very limited role when CCP and LDP are embedded in government programmes, as is the case under the US 2002 Farm Bill. Hauser, Sherrick and Schnitkey examine how the different private and public programmes are correlated, using a simulation model. They argue that the CCP does not duplicate or substitute strongly for crop insurance programmes, because the payments are triggered differently, and that the CCP's influence on hedging and insurance decisions is unclear.

Bourguignon, Lambert and Suwa-Eisenmann study the effect of trade exposure on households' income volatility in less developed countries exporting cash crops. They explain how the macroeconomic risk on export prices spreads into the economy and among social groups. Since agricultural marketing channels are partly driven by consumers, an understanding of consumers' risk behaviour associated with agricultural products is crucial for agriculture. In the final contribution to this issue, Hu, Hunnemeyer, Veeman, Adamowicz and Srivastava study the trade-off that consumers make between environmental and health benefits of a genetically modified food and disutility arising largely from risk. They find considerable heterogeneity in consumer behaviour: consumers can be segmented into four clearly defined groups, and their willingness to trade off risk against benefits associated with GM food depends on various individual and household characteristics.

This special issue of the ERAE offers original contributions on risk behaviour of market participants with, on the producer side, particular emphasis on the hedging and insurance decisions under multiple uncertainty and, on the consumer side, special attention to the willingness to pay for food safety. The papers combine both conceptual analyses and empirical illustrations. They show that the agricultural sector, in its broadest sense, is a great area to address new issues and test new ideas about individual and collective behaviours towards risk.

Olivier Mahul  
World Bank

Joost M.E. Pennings  
University of Illinois at Urbana-Champaign  
and Wageningen University