RISK ANALYSIS, RISK MANAGEMENT, AND RESILIENCE IN AGRICULTURE

Yann de Mey (contact) - Business Economics Group, Wageningen University
Miranda Meuwissen - Business Economics Group, Wageningen University
Tobias Dalhaus - Business Economics Group, Wageningen University

23-27 June 2025

Course organised by the Wageningen School of Social Sciences (WASS),
Wageningen University
Hollandseweg 1
6706 KN WAGENINGEN
The Netherlands

Introduction & objectives of the course

Introduction
The farm sector is increasingly affected by a large set of shocks and risks, including volatile input and producer prices, extreme weather patterns, imbalances in upstream and downstream market power, increased dependency on financial institutions, and (geo)political uncertainty. The importance of risk management and resilience has therefore increased in recent revisions of the Common Agricultural Policy. This context of increased risk, highlights the importance of properly characterizing and analysing risk, the need for adaptive risk management tools, and novel ways of ensuring resilience.

Objectives
Participants will learn about and apply the major theories concerning risk analysis, risk coping strategies and resilience, and will be supported in developing their own research in topics related to risk in agriculture. The course deals with both conceptual and methodological issues, and presents various empirical applications with data and code.

Target group and learning outcomes

The course is graduate-level, oriented towards PhD students, postdoctoral researchers and others with a background in agricultural and applied economics.

After successful completion of this course, students are expected to be able to:
- ✓ Understand theories underlying risk measurement, risk management decision making, and resilience.
- ✓ Critically assess econometric analyses with regards to risk and risk management.
- ✓ Undertake empirical projects on risk and resilience in agriculture.
- ✓ Reflect on current (EU) policy developments with regard to risk management and resilience.

Assumed prior knowledge

Before the start of the course students are required to have a basic understanding of statistics (Appendix A, B, and C from Wooldridge, 2015), econometrics (Chapters 1 and 2 from Wooldridge, 2015) and mathematical notation (Appendix D and E from Wooldridge, 2015). Further reading on Limited Dependent Variables Models (Chapter 17 from Wooldridge, 2015) and Panel Data Models (Chapters 13 and 14 from Wooldridge, 2015) is optional but highly suggested. We will work primarily with the software package R. In order to get familiar with this software, please have a look at this introduction page for R.

Wooldridge, J. M. (2015). Introductory econometrics: A modern approach. Nelson Education.

Course fees

See website. Daily coffee breaks and lunch, and the welcome dinner + social drinks are included in the course fees.

Session times

The course consists of theory and method sessions, divided in interactive plenary and breakout sessions for the presentation of theoretical aspects and practical sessions to provide exposure to analytical exercises, simulations, and econometric estimations. Practical sessions will include applications of the theory, computer analyses with actual data sets, and interpretations in practice.

Outline of the course in hours

The course will involve daily sessions in which sessions on theory (3 hours, mornings) are alternated with practical sessions (4 hours, afternoons). During the practical sessions, open ended questions will be formulated that need to be completed in order to pass the course. See full course schedule on final page.

Course materials

Reading materials (articles), slides and accompanying materials will be distributed during the course using the platform BrightSpace. You will be granted access before the start of the course.

Requirements and ECTS

Before the start of the course, participants submit a short document (max 1 page) about their research with a particular focus on the role of risk therein (*send to yann.demey@wur.nl before 18 June 2025)*. During the course, participants will answer open questions at the end of each day. Completion of these 5 assignments is required to be eligible for the 3 credits (according to ECTS).

Location
The sessions will be held on the Wageningen campus (details TBD).

Morning sessions:	Afternoon sessions:
9:00–12:00	13:00–17:00

Registration
Registration is possible electronically via the following link:
https://event.wur.nl/163640/registration
The maximum number of participants is set at 20, the minimum at 10.

Please make sure that you provide the most recent contact details so that in case of any changes you will be notified promptly. After your internet registration you will receive a short notification that your name has been registered. At least two weeks before the course you will receive a confirmation about the location and the schedule. WASS will also send an invoice to the address indicated in the registration form.

Please e-mail to Marcella.Haan@wur.nl in case you have not received the second confirmation two weeks before the course.

Cancellations
Cancellations may be made free of charge until 1 month before the start of the course. Cancellation fee of 100 % applies if participants cancel the course less than 1 month prior to the course. The organisers have a right to cancel the course not later than 1 month before the course starts. The participants will be notified of any changes at their e-mail addresses.

Further information
On course content, please contact the course organiser, Yann de Mey (BEC) at yann.demey@wur.nl.

On WASS: https://www.wur.nl/en/education-programmes/phd-programme/graduate-schools/wageningen-school-of-social-sciences.htm

For details about the registration, fees, study materials, etc. please contact
Marcella Haan (Tel +31 317 484126, Marcella.haan@wur.nl)

Course Schedule 2025

Day	Morning	Afternoon	Evening
Day 1 *23 June*	9:00-10:00 **Introduction** [YdM] 1. Introduction round and discussing research background of participants. 2. Risks in agriculture and need to cope with risks 10:00-12:00 **Risk theories** [TD] 1. Theoretical background on decision theory under risk 2. Specific focus on Expected Utility Theory	13:00-15:00 **Utility theory** [TD/YdM] 1. Exercises on Expected Utility Theory 15:00-17:00 **Simulation and optimisation under risk** [TD/YdM] 1. From profit maximisation to utility maximisation	17:30 **Joint dinner**
Day 2 *24 June*	9:00-11:00 **Behavioural economics** [TD] 1. Violating Expected Utility Theory 2. Probability weighting 3. Loss aversion 11:00-12:00 **An application of Prospect Theory** [YdM]	13:00-15:00 **Risk attitudes** [TD/YdM] 1. Exercises on measuring risk attitude (e.g. elicitation via survey instruments or experiments) 15:00-17:00 **Behavioural economics** [TD/YdM] 1. Exercises on prospect theory	
Day 3 *25 June*	09:00-10:30: **Measures of risk** [YdM] 1. Metrics to capture risk 2. Coherent risk measures 10:30-12:00 **Production risks** [YdM] 1. Yield distributions & estimation 2. Stochastic production functions 3. Lower partial moments	13:00-15:00 **Risk measures** [YdM/TD] 1. Simulations on risk measures 15:00-17:00 **Production risk** [YdM/TD] 1. Exercises on stochastic production functions 2. Exercises on lower partial moments	
Day 4 *26 June*	9:00-12:00 **Risk Management** [TD/YdM] 1. Risk management tools and their adoption 2. Moral hazard and adverse selection 3. Insurance	13:00-15:00 **Risk management** [TD/YdM] 1. Simulation exercises on risk management 15:00-17:00 **Uptake of risk management tools** [YdM/TD] 1. Econometric models on determinants of RM tools	17:30 **Informal drinks**
Day 5 *27 June*	9:00-12:00 **From risk management to resilience** [MM] 1. Building intrinsic resilience 2. Resilience at multiple system levels	13:30-16:00 **Resilience measures** [MM] 2. Exercises on resilience 16:00-17:00 **Closing speech** [MM] 1. State of the art & outlook [MM] 2. Reflecting back on research backgrounds of participants [MM]	

YdM: Yann de Mey, TD: Tobias Dalhaus, MM: Miranda Meuwissen.