



Wageningen School  
of Social Sciences

# **RISK ANALYSIS AND RISK MANAGEMENT IN AGRICULTURE: UPDATES ON MODELLING AND APPLICATIONS**

**Miranda Meuwissen - Business Economics, Wageningen University**

**Yann de Mey - Business Economics, Wageningen University**

**Fabio Santeramo - Dipartimento di Scienze Agrarie, degli Alimenti e dell'Ambiente,  
Foggia University, Italy**

**6 – 10 July 2020**

**Course organised by the Wageningen School of Social Sciences (WASS),  
Wageningen University**

## Introduction & objectives of the course

### *Introduction*

The farm sector is affected by a large and changing set of risk sources including more volatile producer prices, unusual weather patterns, upstream and downstream market power along the value chain, increasing dependence on financial institutions, and political risks. This induces the need for (new) risk management tools. Also the Common Agricultural Policy 2020 is considering risk management as an important component of agricultural policy.

### *Objectives*

Participants will learn theories concerning risk analysis and risk coping strategies and will develop proficiency with software to facilitate the initiation of their own research in topics related to risk in agriculture. The course deals with both conceptual and methodological issues.

### **Target group and learning outcomes**

The course is oriented toward PhD students, postdoctoral researchers and others with background in agricultural and applied economics.

After successful completion of this course students are expected to be able to:

- Understand theories underlying risk and risk management decision making.
- Model risk including copulas.
- Critically assess econometric analyses with regard to adoption of risk management tools.
- Model whole-farm risk management decisions.
- Reflect on current (EU) policy developments with regard to risk management.

### **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 packages Stata and @Risk. In order to get familiar with this software, please have a look at (i) introductory guides [1](#) ; [2](#) or more detailed tutorials [1](#) ; [2](#) for Stata and (ii) [this](#) introduction page for @risk.

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

### **Course fees**

*See website.*

### **Session Times**

The course consists of theory and method sessions, divided in morning sessions for the presentation of theoretical aspects, afternoon practical sessions to provide exposure to analytical exercises, simulations, and econometric estimations, and one evening session on participants' experiences regarding risk management issues. In particular, the practical will include applications of the theory, computer analyses with actual data sets, and interpretations in practice. At the end of each practical, answers and reflections will be handed in (four times). Participants receive feedback on the next course day.

**Outline of the course in hours**

The course will involve daily sessions, with a 3-hour theory session in the morning, and a 3-hour practical session in the afternoon. There will be two take-home exams which need to be handed in on Tuesday (Part I) and Thursday (Part II) at 20.00 h. Students can work in groups (maximum 3 students per group).

**Course materials**

Reading materials prepared by the authors will be sent to participants in advance of the course. Articles and other accompanying materials will be distributed during the course.

**Requirements and ECTS**

Before the start of the course, participants submit a sheet with their expectations and background, and a definition of 'risk' in their own words (*send to [miranda.meuwissen@wur.nl](mailto:miranda.meuwissen@wur.nl) before 1 July 2020*). During the course, participants will hand in two take-home exams. A mark of > 5.5 makes them eligible to obtain the amount of 3 credits (according to ECTS).

## Course Schedule

Day	Lecture (morning)	Practical (afternoon)	Evening
1 (6 July)	<b>9.00-10.00:</b> Introduction [MM] 1. Risks in agriculture and need to cope with risks <b>10.00-12.00:</b> Uncertainty and risks [FS] 2. Measures of risk 3. Utility theory 4. Risk aversion	<b>13.30-16.30</b> 1. Exercises on Expected Utility Theory, e.g. lotteries, paradoxes, etc. [FS] 2. Exercises on measuring risk attitude (e.g. elicitation via experiments) [FS]	<b>19.00-</b> <i>Social dinner</i>
2 (7 July)	<b>9.00-11.00:</b> Price risks [FS] 1. Price dynamics 2. Price volatility <b>11.00-12.00:</b> Asymmetric information [FS] 3. Moral hazard and adverse selection	<b>13.30-15.30</b> 1. Econometric models to analyse price dynamics and price volatility [FS] <b>15.30-16.30</b> 2. Experiments on moral hazard and adverse selection [FS]  <b>Take-home exam part I</b>	<b>20.00:</b> hand in take-home exam part I
3 (8 July)	<b>9.00-10.00:</b> <i>Feedback take-home exam part I</i> [FS] <b>10.00-12.00:</b> Risk coping strategies [YdM] 1. On-farm coping strategies 2. Off-farm strategies (insurance, financial products, credit, contracts)	<b>13.30-16.30</b> 1. Adoption of risk coping strategies (econometric models) [YdM] 2. Interpreting determinants of adoption [YdM]	<b>16.30-</b> <i>Informal drinks</i>
4 (9 July)	<b>9.00-11.00:</b> Production risk [YdM] 1. Yield distributions 2. Stochastic production functions <b>11.00-12.00:</b> Dependence of risk [MM] 3. The nature of dependence 4. Evidence from agri-food cases	<b>13.30-15.00</b> 3. Estimation of yield distributions [YdM] <b>15.00-16.30</b> 4. Stochastic simulation [MM]  <b>Take-home exam part II</b>	<b>20.00:</b> hand in take-home exam part II
5 (10 July)	<b>9.00-11.00:</b> Summary of risk theories [MM] Includes Expected utility theory, Prospect theory, Resilience theory, and Subjective probability theory  <b>11.00-12.00:</b> <i>Feedback take-home exam part II</i> [MM]	<b>13.30-15.00</b> Risk management tools of the EU Rural Development Policy: state of affairs and expected developments post 2020 [Van Asseldonk] <b>15.00-15.30</b> Closing speech: State of the art & outlook [MM]	

FS: Fabio Santeramo, YdM: Yann de Mey, MM: Miranda Meuwissen.

**Location**

The sessions will be held in building “De Leeuwenborch”, Hollandseweg 1 in Wageningen, The Netherlands. The exact rooms will be announced later.

Morning sessions:

9.00-12.00 Lecture room {to be determined}

Afternoon sessions:

13.30-16.30 Computer room {to be determined}

**Registration**

Registration is possible electronically via the WASS courses page:

<http://www.wageningenur.nl/en/Education-Programmes/PhD-Programme/Graduate-Schools/Wageningen-School-of-Social-Sciences/Courses/Registration.htm>

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](mailto: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, Miranda Meuwissen (BEC). She can be reached through [miranda.meuwissen@wur.nl](mailto:miranda.meuwissen@wur.nl) (+31 317 483857).

On WASS: [www.wageningenur.nl/wass](http://www.wageningenur.nl/wass)

For details about the logistics, accommodation, registration, fees, study materials, etc. please contact

Marcella Haan

Tel +31 317 484126

[Marcella.haan@wur.nl](mailto:Marcella.haan@wur.nl)

Contact addresses:

Wageningen School of Social Sciences

Wageningen University

Hollandseweg 1

6706 KN WAGENINGEN

The Netherlands

### Useful information on accommodation for participants from outside Wageningen

#### Hotels:

Hof van Wageningen: 62.50 euro for 1 persons room, 70 euros for 2 persons room, both prices are including breakfast;

[www.hofvanwageningen.nl](http://www.hofvanwageningen.nl)

Hotel de Wageningseberg: 85 euro for 2 persons room, also including breakfast;

<http://hoteldewageningscheberg.nl/en/>

Hotel Nol in 't Bosch: 79 euro for 1 person room, 85 euro for 2 persons room, also including breakfast; <http://www.nolintbosch.nl/>

#### Bed&Breakfast:

See: <https://www.bedandbreakfast.nl/bed-and-breakfast/wageningen/netherlands/c2745088>

B& B De Heksenspeeltuin: 30 euro for a 1 person room

Address: Einthovenstraat 15, 6706JA Wageningen

Phone: +31 317-418161

E-mail: [callyd@zonnet.nl](mailto:callyd@zonnet.nl)

Website: [www.heksenspeeltuin.nl](http://www.heksenspeeltuin.nl)

Villaria Bed en Breakfast: 39-58 euro for a 1 person room

Address: Nassauweg 21, 6703CG Wageningen

Phone: +31 317-419636

Emai: [info@villaria.nl](mailto:info@villaria.nl)

Website: <http://villaria.nl/>

Possibilities to rent a bike

Ons Bakhuus Bed & Breakfast: 45 euro for a 1 person room

Address: Dolderstraat 64, 6706 JG Wageningen

Phone.:+31 317-411994

E-mail: [info@onsbakuus.nl](mailto:info@onsbakuus.nl)

Website: [www.onsbakuus.nl](http://www.onsbakuus.nl)

De Herbergh Bed & Breakfast: 60 euro for a 1 person room

Address: Generaal Foulkesweg 8, 6703 BR Wageningen

Phone: +31 317-410747

E-mail: [glindenbergh@wanadoo.nl](mailto:glindenbergh@wanadoo.nl)

Website: <https://www.bedandbreakfast.nl/bed-and-breakfast/wageningen/de-herbergh/3269/>

Toproom B&B: 55 euro for a 1 person room

Vossenlaan 17

6705 CD Wageningen-Hoog

Phone: +31 317-450214

E-mail: [info@toproom.nl](mailto:info@toproom.nl)

Website: [www.toproom.nl](http://www.toproom.nl)

Possibilities to rent a bike

## From Schiphol Amsterdam Airport to Wageningen

At the Airport you can buy a train ticket in the 'arrivals' area by the baggage claims. You will see the sign "Train tickets" near the exit. Then follow the signs 'Nederlandse Spoorwegen' (NS) or 'Trains and busses' to the railway station.

Purchase a one-way ticket to the Ede-Wageningen train station, this will cost € 14,10 (plus a service charge if you buy the ticket at the ticket counter). It is also possible to buy the ticket from the ticket vending machines in the station.

There are direct connections from Schiphol Amsterdam Airport to Ede-Wageningen every 30 minutes. Additionally, twice an hour there is a connecting service from Schiphol to Ede-Wageningen where you have to change trains in Utrecht. The destination boards on the platform will indicate the different stations where the train will stop. Check for the names Ede-Wageningen or Utrecht and board the train and when necessary change in Utrecht. The trip from Schiphol to Ede-Wageningen takes you a bit more than one hour.

For Dutch train connections use [www.ns.nl](http://www.ns.nl), [www.thalys.com](http://www.thalys.com), [www.db.de](http://www.db.de)



The train station is not located directly in Wageningen. This lack is fully compensated by fair means of transportation by buses and taxis. From railway station Ede-Wageningen you can take a taxi (approx.15 min.). Taxis leave at the north side of the station. You can also come by bus: line 52 (direction Wageningen/ Arnhem) departs from the north side of the station or bus line 88 (Valleilijn, direction Wageningen) leaves from the south side of the station. You have to purchase a ticket from the driver in the bus, which will cost about 2 euros.