



Wageningen School  
of Social Sciences

# WASS PhD workshop on using copulas in risk modelling

Friday 30 September 2016

Prof dr Barry Goodwin

North Carolina State University

**Registration deadline:**

**August 30, 2016**

**Workshop organised by the Business Economics group (BEC) in collaboration with  
Wageningen School of Social Sciences (WASS)**

**Wageningen University**

## Introduction

Copulas are statistical methods to model the joint distribution of variables such as prices and yields. Unlike simple correlation coefficients such as Spearman's rank correlation, copulas characterize the non-linear dependence between a set of variables. They enable to better account for the extreme parts of probability distributions in risk modelling and are increasingly applied in e.g. crop yield insurance and price risk management. In rating agricultural insurance contracts, copulas can capture the state dependent nature of the dependence between e.g. yields in different geographical areas, yields of different crops, and the dependence between prices and yields. Empirical evidence has shown that the spatial correlation of yields depends on the state of nature, i.e. the correlations become stronger during extreme weather conditions than in a typical year. Such a non-linear correlation of yields can be captured with copulas. Another advantage of copulas is that they allow the flexibility of choosing the marginal distributions of the dataset.

Besides agricultural insurance, copulas are widely applied in the field of finance (e.g. evaluation of the interdependence between asset returns of investment portfolios). More broadly, the workshop is relevant for all PhDs and fellows whose projects deal with modelling various sources of environmental and economic uncertainty. Barry's experience with regard to copulas is in the area of crop yield and revenue insurance.

## Outline

The one-day workshop will consist of a mix of lectures and applications:

|              |   |
|--------------|---|
| 9.15:        | Welcome   |
| 9.30-10.15:  | Quantifying Multivariate Sources of Risk -- Introduction                |
| 10.15-11.00: | Approaches to estimating univariate risks (marginals)                   |
| 11.00-11.15: | Coffee break  |
| 11.15-12.30: | The nature of dependence -- a more general consideration of correlation |
| 12.30-13.15: | Lunch   |
| 13.30-15.15: | Practical issues in modelling dependence                                |
| 15.15-15.30: | Coffee break  |
| 15.30-16.30: | Tools for modelling dependence (R, SAS, etc.)                           |
| 16.30:       | Closure   |

## Assumed prior knowledge

No specific prior knowledge is assumed, although a keen interest and aspiration to gain insight in risk modelling is expected.

**Course fees and maximum number of participants**

For PhDs of WASS there is a fee of 50 euros. For all other participants and for staff members (fellows/post docs), there is a fee of 100 euros for the whole course (including drinks, lunch, and course materials). The maximum number of course participants is 30.

**ECTS**

For the workshop 0.3 credits can be granted.

**Location**

The workshop will be held in building "De Leeuwenborch", Hollandseweg 1 in Wageningen, The Netherlands. The exact rooms will be announced later.

**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>

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**

Further information can be requested from the course coordinator:

Miranda Meuwissen ([miranda.meuwissen@wur.nl](mailto:miranda.meuwissen@wur.nl)), Business Economics (BEC)

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

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

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