

# Probability Theory for EOR

Introduction of the course motivation/organisation

Lingwei Kong

[l.kong@rug.nl](mailto:l.kong@rug.nl)

These slides adopt materials constructed by Dr. Tom Boot, who taught the course in previous years.

Why?

# Uncertainty

- ▶ Econometrics = uncertainty
- ▶ We never know the exact outcome (economy one year from now?)
- ▶ Maybe we can determine the probability of different outcomes/events.

What does this mean: “*probability*”?

# What we'll learn: 6 chapters

Book: *Introduction to Probability, Second Edition* by J. Hwang and J.K. Blitzstein.

- ▶ Chapter 1: A coherent way to assign probabilities to events.  
*This is bowling. There are rules.* (The Big Lebowski)
- ▶ Chapter 2: How probabilities change with new information.
- ▶ Chapter 3: From events to (discrete) numbers. Because we like numbers!
- ▶ Chapter 4: What numbers/outcomes do we expect?
- ▶ Chapter 5: From discrete to continuous outcomes.
- ▶ Chapter 6: Moment Generating Functions. (Surprisingly, MGF determines the distribution (under some regular conditions).)

# Organization of the course

# This course

- ▶ Lectures

  - Week 1-6: Chapter 1-6.

  - Week 7: overflow and/or repetition.

- ▶ On-campus Tutorials & Teaching Assistants:

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Karlijn Zwigelaar	k.a.h.zwigelaar@student.rug.nl
Joost Doornbos	joostdoornbos01@gmail.com
Quinten Huisman	q.n.huisman@student.rug.nl
Sander van Beek	s.g.h.van.beek@student.rug.nl

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- ▶ **You!**

# Highlights

Details in the course syllabus.

- ▶ Lectures
  - ▶ Part I: Recorded knowledge clips available every Monday at 9:00;
  - ▶ Part II: Live Wednesday at 10:00. Here we briefly review the materials and discuss the questions you have while watching the videos.
- ▶ Discussions:
  - ▶ On-campus tutorials;
  - ▶ Discussion board on Nestor.
- ▶ Note: The book contains all material relevant for the exam. Use it wisely!

# Tutorials

- ▶ On campus tutorials (discuss tutorial exercises once a week: Thursday or Friday based on your groups)
  - ▶ 45 minutes peer review (feedback)/discussions to produce your results (better to have done some works before the tutorials)
  - ▶ 45 minutes explanation of exercises.
- ▶ Group composition on Nestor.
- ▶ Earn you bonuses!



# Assessment

- ▶ Tutorial exercises (Bonuses)
- ▶ Assignments (20%, in pairs *within* tutorial groups, week 3/6).
- ▶ Closed-book on-campus exam (80%, individual). **One exercise, 3/10, you would have seen either from assignments, weekly tutorials or selected exercises.**
- ▶ Practice, practice, practice. We have other selected exercises. Understand instead of knowing by heart. Earn bonus by working hard and participating the tutorials.
- ▶ Keep up. **One chapter each week!**

Let's get to it!