University of Illinois at Urbana-Champaign
Department of Economics
Economics of Risk (ECON 469)

Instructor: Zaruhi Sahakyan   Spring 2016

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Time and Place

MW 2:00PM-3:20PM, 119 David Kinley Hall

In this course students will explore the important topics of risk, uncertainty and information in economics. While a standard intermediate microeconomics course focuses on a world with complete information and certainty, Economics of Risk will focus on events and circumstances in which economic decisions must be made without complete knowledge about current or future conditions. Building on methods and tools from intermediate microeconomics and economic statistics courses, Economics of Risk covers (but is not limited to) the following topics:

1. Expected utility theory of consumer choice under uncertainty (lectures 1-7)

2. Risk aversion and applications to insurance (lectures 8-11)

3. Comparing lotteries; first and second order stochastic dominance (lectures 12-16)

4. The value of information (lectures 17-20)

5. Asymmetric information: moral hazard and adverse selection (lectures 21-24)

6. Non-expected utility theory (lecture 25-28)

I will make my presentation slides available online on Compass2g.

Prerequisite for the Course

ECON 302 or equivalent.; one of MATH 220 or MATH 221 or equivalent. ECON 202, STAT 100 or equivalent.

It is **strongly recommended** that you complete ECON 302 or equivalent.; one of MATH 220 or MATH 221 or equivalent. **Economics of Risk is most suitable for students who enjoyed and performed well (A- and above) in Intermediate Microeconomics. The prerequisite ECON 302, ECON 202 or equivalent courses will be enforced for this course. If you do not have ECON 302 and ECON 202 completed before this course begins, you will be dropped.**

Required Textbook

Eeckhoudt, Louis, Christian Gollier and Harris Schlesinger (hereafter referred as EGS). *Economic and Financial Decisions Under Risk.* Princeton University Press, 2005. Available in paperback

Recommended Textbooks

Hirshleifer, Jack and John G. Riley. *The Analytics of Uncertainty and Information.* Cambridge University Press, 1992.

Arrow, Kenneth J. *Essays in the Theory of Risk-Bearing*, North-Holland, 1970.

Diamond, Peter and Michael Rothschild (eds). *Uncertainty in Economics: Readings and Exercises.* Academic Press, second edition 1989.

Diamond, P. A. and J. E. Stiglitz. *Increasing in Risk and in Risk Aversion.* Journal of Economic Theory, 1974. pp. 337-360

Dixit, A. K. and R. S. Pindyck. *Investment under Uncertainty.* Princeton University Press, 1994.

Gollier, Christian. *The Economics of Risk and Time.* The MIT Press, 2001.

Hens, Thorsten and Marc Oliver Rieger. *Financial Economics. A Concise Introduction to Classical and behavioral Finance.* Springer, 2010.

Von Neumann, J. and O. Morgenstern. *Theory of Games and Economic Behavior.* Princeton University Press, 1953.

Assessment

Your grade will be based on your performance in the following categories: One in-class midterm exam (40% of your grade), a final exam (45%) and class participation credit (5%) and homework (10%). Note: Graduate students will have to answer an additional and more challenging question on midterm and final examinations.

Arguments such as "I studied so hard for this class, so I deserve a higher grade than what my exam grades suggest", "I am graduating this semester and I already secured a job, so give me a passing grade" or "If I receive B-, my GPA will go down and ..." do not work for this class.

Midterm Exam: Wednesday, March 16, 2016, in class. Location: TBA

Final Exam: TBA

The final exam date is firm and you should put it in your schedule. If there is a change, it will be announced sufficiently in advance. Note that the time and the date for the final exam is set by the University and cannot be changed.

If you miss an exam because of University approved reasons (see the Student Code), you need to provide necessary documentation from the Emergency Dean to receive alternative accommodation. If I receive no written notification from you in advance and you do not show up for the exam, zero points will be recorded as your exam score.

Please book your flights accordingly. No excuses such as "I have to attend my sister's wedding in (insert exotic location here)", or "My family planned a (insert exciting adjective here) vacation in (insert exotic location here)" or "I already booked my tickets to go back home and they are non-refundable" will be considered.

Homeworks

Problem sets will be assigned periodically. They will be graded lightly. Questions in problem sets are good practice questions in preparation for exams. The exams will be similar in style to the questions in homeworks and the ones we will solve in class.

- Problem sets and their solutions will be posted on Compass2g.

- Students are encouraged to work in small groups (four or fewer students) on the problem sets, but they must hand in independently written-up solutions.

- It will be very difficult to do well on the exams unless students can independently complete problem set-like questions.

Important Warning

Information about homework assignments, exams, and posting of supplementary notes for lectures and readings will be posted in Compass2g. You must make sure to check Announcements in Compass frequently.

Class Participation

Class participation is worth 5% of your grade. This grade is based on your performance in surprise quizzes (the number varies from year to year). It is strongly recommended that you attend each class. They will give you a sense of what I feel is important in the class. Experience shows that students who attend the lectures do on average much better than those who do not. You do not need to send me an excuse note when you are not able to attend a session. Also you cannot make up surprise quizzes if you miss them.

Class attendance is not, by itself, a performance measure for this class ("I came to every lecture, so I should get at least a B" does not work for this class). If you miss a class, ask a fellow student for his/her class notes. Do not send me an email to ask what was covered in class. It is your responsibility to catch up with the material you missed. Do not expect me to go over the entire lecture during the office hours if you miss a class. I am happy to answer all your questions however if you miss a lecture I expect you to go over the lecture notes and corresponding reading material in advance before coming to my office hours.

I encourage, as well as expect, questions during the lectures. Besides the homework and test grades, this is really my only source of information about how comfortable you are with the pace of the course. You need to give me feedback or I will assume that everyone is comfortable with the material and will keep moving forward. I have no problem going over a concept multiple times. At the beginning of the class I usually review the concepts covered in the previous lecture. This will be a good time for your questions, comments or concerns.

In the classroom, use of cell phones is forbidden. Tablets or computers should be solely used for viewing the lecture slides. Other activities distract for both me and your classmates. If you need to use your cell phone, please exit the classroom.

Grading Scale

The scale used to assign letter grades in the course will be established at the end of the semester. A +/- scale will be used. The cut-offs for +/- will also be established at the end of the semester.

Academic Integrity

Violations of academic integrity as given in *the Code of Policies and Regulations* will be taken extremely seriously, and students found cheating in the course (or helping others to cheat) will be penalized according to the Code's guidelines.

Disability Accommodations

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@illinois.edu.

Tentative Schedule

1. Expected utility theory of consumer choice under uncertainty (Weeks 1-3)

   - Required reading: Chapter 1 from EGS
   - Recommended reading: Von Neumann, J. and O. Morgenstern. *Theory of Games and Economic Behavior.* Princeton University Press, 1953. Corresponding chapters from Hirshleifer and Riley.
   - Concepts to recall: Bayes Rule, Combinatorics
   - Homework 1 (Exercises 1.1, 1.2, 1.3, 1.4, 1.5 from EGS)

2. Risk aversion and applications to insurance (Week 4-5)

   - Required reading: Chapter 3 from EGS
   - Recommended reading: Corresponding chapters from Hirshleifer and Riley.
   - Concepts to recall: Income and Substitution Effects, Utility maximization (first order and second order conditions for optimization problems)
   - Homework 2 (Exercises 3.1, 3.2, 3.3, 3.4, 3.5 from EGS -skip c.d.f. parts)

3. Comparing lotteries; First and second order stochastic dominance. (Weeks 6-8)

   - Required reading: Chapter 2 from EGS
   - Recommended reading: Corresponding chapter from Hirshleifer and Riley.
   - Concepts to recall: Integration by parts, cumulative distribution functions
   - Homework 3 (Exercises 2.1, 2.2, 2.3, 2.4, 2.5 from EGS and complete the parts skipped in Homework 2)

   Midterm exam

4. The value of information (Weeks 9-11)

   - Required reading: Chapter 8 from EGS
   - Recommended reading: Corresponding chapters from Hirshleifer and Riley.
   - Concepts to recall: Options
   - Homework 4 (Exercises 8.1, 8.2 from EGS)

5. Asymmetric information: moral hazard and adverse selection. (Weeks 11-12)

   - Required reading: Chapter 12 from EGS
   - Recommended reading: Corresponding chapter from Hirshleifer and Riley.
   - Concepts to recall: Incomplete information games

- Homework 5 (Review in class exercises)

6. Non-expected utility theory (Week 13-14.5)

  - Required reading:
    Kahneman, D. and Tversky, A. 1979. *Prospect theory: an analysis of decision under risk.* Econometrica 47:263291.
    Tversky, A. and D. Kahneman. 1992. *Advances in prospect theory: cumulative representation of uncertainty.* Journal of Risk and Uncertainty 5:297323.

  - Recommended reading: Chapter 2 (parts 2.4 and 2.5 on Prospect theory), Hens, Thorsten and Marc Oliver Rieger.

  - Concepts to recall: Axioms of expected utility theory, Allais paradox, FOSD.