AGRICULTURAL ECONOMICS 613

INTRODUCTION TO ECONOMICS OF RISK

Syllabus

3 credits, 3 hrs. of lecture:
Prerequisites: STAT 511 (basic statistics), ECON 511 (intermediate micro theory), AGEC 552 (math programming), or equivalent statistics, microeconomics and math programming.

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Description and Objectives

The course is an introduction to the economics of risk. It emphasizes the expected utility hypothesis and individual decision making. It will be oriented toward providing a background in expected utility theory and application from which students can move on to applications and more advanced work in their fields of specialty. The course is presented at a level that can be handled by agricultural economics master’s students who have had intermediate microeconomic theory.

Grading

Homework and class participation 50%
Final exam 50%

Term Paper or Presentation

Students are required to do an acceptable paper or presentation. The project or presentation is not intended to be a huge deal. I want you to do something outside of what is covered in class. Some examples: review several articles on a topic, do something empirical, or give a lecture to the class on something you are doing or have done in the area of risk. Many students in the past have presented their MS thesis work if it has something to do with risk, or you may present something they are working out for their dissertation if it has something to do with risk. I will be flexible and most students choose the presentation option, but a paper is equally acceptable.

Office Hours

Stop in my office or e-mail for an appointment. The other class I teach (AGEC 424) meets MWF 1:30 to 2:20 and has three two-hour labs, which begin on Thursdays at 7:30, 1:30 and 3:30. I check email often so that is the first choice to contact me.
COURSE OUTLINE

Class 1&2: Introduction: Expected Utility Hypothesis, Axioms, Proof of EUH, uniqueness of utility, EUH history
Readings: 1 (pp. 77-85)

Classes 3 through 7: Technical Aspects of Risk: indirect utility; risk aversion; certainty equivalent; risk premium; insurance premium; maximum bid; absolute and relative risk aversion; increasing, constant, and decreasing absolute and relative risk aversion; units of risk aversion; bounded utility; uncertain vs. certain initial wealth; investor behavior and risk aversion; utility of wealth vs. income; log utility and geometric mean; utility functional forms; getting U(W) from r(W).
Readings: 1, 3-6, 11

Class 8: Utility function elicitation, Joint estimation of technology and risk preferences
Reading: 12, 13

Class 9 and 10: Review of probability, Expected utility and moments, example extension application AgRisk, price and yield uncertainty
Reading: 15

Class 11 & 12: Stochastic Dominance
Readings: 23, 24, 27

Class 13 & 14: Mean-Variance Model
Readings: 31-32

Class 15: Riskless Assets: MV Separation Theorem, (SD with a riskless assets)
Readings: 36, 38-42

Class 16 & 17: Covariance Risk, Diversification, Singe Index Model
Readings: 46-48

Class 18: MOTAD, Target MOTAD
Readings: 43-45

Class 19: CAPM
Readings: 49-51

Class 20: Increasing Risk I
Readings: 52

Class 21: Lexicographic Utility and Safety First
Readings: 54

Class 22: GAMS problems

Class 23 & 24: Production under Risk
Readings: 60
**Class 25:** Increasing Risk II  
Reading: 53

**Class 26:** Time, Risk, and Related Issues  
Reading: 61

**Class 27 & 28:** Discrete Stochastic Programming  
Readings: 64

**Class 29:** Anomalies and Prospect Theory  
Readings: 70-72

**Class 29:** State Preference Theory  
Readings: 73-74

**Class 30:** Review of EUH  
Readings: 75, 76
**AGEC 613 Readings**

Most of the journal articles are available on-line, so I assume you can find them, but let me know if you can’t find a journal article. The bold readings are the most important in each section. We will discuss how to acquire the book chapters in class.

**Introduction**


**Technical Aspects of Risk**


**Measuring Risk Attitudes**

Numerous other references on measuring risk aversion and utility will be distributed in a pdf file.

**Review of Probability**

15. **Anderson, Dillon, and Hardaker**, *Ag Decision Analysis*, Chapter 1 and 2.


**Stochastic Dominance**

Basic Stochastic Dominance


Nth Order Stochastic dominance


Stochastic Dominance with Respect to a Function

a. Theory


b. Application

c. A computer program
30. Goh, Shih, Cochran, Raskin, “A Generalized Stochastic Dominance Program for the IBM PC”, Southern Journal of Agricultural Economics, December 1989, pp. 175-182. (These authors also have a U of Arkansas bulletin on the program.)

Mean-Variance

32. Levy and Sarnat, Portfolio and Investment Selection: Theory and Practice, Chapters 7, 8, 9.


MV with a Riskless Asset (Separation Theorem)

38. McCarl and Spreen have a MV example program in their Chapter 14 – Risk Modeling http://agecon2.tamu.edu/people/faculty/mccarl-bruce/mccspr/new14.pdf

SD with a Riskless Asset


MOTAD


45. P. Barry, editor, Risk Management in Agriculture, Chapters 9 and 10.

47. McCarl and Spreen have a MOTAD examples in their Chapter 14 – Risk Modeling http://agecon2.tamu.edu/people/faculty/mccarl-bruce/mccspr/new14.pdf

Single Index Model


CAPM


Increasing Risk


**Lexicographic Utility and Safety First**

56. Barry, P.J., editor, Risk Management in Agriculture, Chapter 2 (pp. 19-21), and Chapter 5.


**Production Under Risk**

62. Anderson, Dillon and Hardaker, Ag Decision Analysis, Chapter 6, “Production Under Risk”.

**Time, Risk and Related Issues**


**Discrete Stochastic Programming (Stochastic Programming with Recourse)**


72. Chapter XIV Risk Modeling of McCarl and Spreen
Download page: [http://agecon2.tamu.edu/people/faculty/mccarl-bruce/books.htm](http://agecon2.tamu.edu/people/faculty/mccarl-bruce/books.htm)

**Failures of the EUH**

a. Shoemaker

b. Machina

c. Allais Paradox
   [JSTOR 1907921](http://links.jstor.org/sici?sici=0012-9682%28195306%2921%3A4%3C503%3ALCOTDALR%3E2.0.CO%3B2-J)

Don’t tell anyone but I recommend the Wikipedia entry on this topic: [http://en.wikipedia.org/wiki/Allais_paradox](http://en.wikipedia.org/wiki/Allais_paradox)

d. Kahneman and Tversky: Prospect theory


**State Preference Theory**


**Review of EUH**