SYLLABUS: AGEC 600 -- AGRICULTURAL FINANCE

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Objectives

The primary goal of AGEC 600 is to open the area of financial economics to students through reading, discussion, lectures, and homework. The course will include theoretical material and emphasize potential research, extension, and business applications. Emphasis is placed on the financial management of firms without publicly traded equity capital. Some specific objectives are for students to:

(1) Develop greater knowledge of data, literature, institutions, and research issues in agricultural finance.
(2) Develop greater knowledge of the budgeting and analysis of capital investments.
(3) Develop a sound understanding of the capital structure decisions of non-corporate firms.
(4) Become acquainted with mathematical programming applications in finance, including models of risky choices and models of optimal debt financing and investment.

Prerequisite

Students are presumed to have a finance background comparable to AGEC 524 or MBA level finance. You are assumed to be familiar with net present value budgeting and should be familiar with financial statements and ratio analysis. We may be doing some mathematical programming. If we do the programming, at least rudimentary knowledge of LP is needed. AGEC 552 is sufficient.

Textbook

There is no textbook per se for the course. Over the course of the semester we will use material from journal articles and chapters from selected textbooks. This will be discussed in class. If you are planning to take courses in the Krannert PhD series the expectation is that you are familiar with finance in Brealey, Richard A., and Stewart C.

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1 The phrase "firms without publicly traded equity" is long and awkward, but is in fact what I mean. Sometimes I will use "non-corporate firms" or "small businesses" as a shorter substitute, neither are perfectly accurate.
Myers. **Principles of Corporate Finance**, which is not the focus of this course, but I highly recommend the text.

**Grading and Exams**

The course grade is based on homework, class participation, and an oral final exam. Because of diversity of backgrounds, the course grades will have a significant subjective component. Those of you with more background in economics and finance are expected to push yourselves further into theoretical areas and research methods. Completion of all homework assigned, a high degree of class attendance with participation, and evidence of at least some learning on the final is necessary and sufficient for a grade of B or better. There will be an oral final exam with a list of potential questions provided in advance.

Nominally the weighting will be:
Homework, attendance, participation, presentation 50%
Final exam 50%

**Term Paper or Presentation**

Students are required to do an acceptable paper or presentation. The paper or presentation is not intended to be a huge deal. I want you to do something outside of what is covered in class, but related to finance. 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 related to finance. Many students in the past have presented their MS thesis work if it has something to do with finance, or present something they are working out for their dissertation. I will be flexible and most students choose the presentation option, but a paper is equally acceptable.

In the past some MS students have presented topics typically covered in MBA finance courses, such as Modigliani and Miller, Fama and French, or the CAPM.

**Office Hours**

Stop in 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 on Thursdays. I check email often so that is the first choice to contact me.

Boilerplate (standard in an agricultural economics syllabus)

**Communication**

Please note that my primary out-of-class method of communication will be via email to your *Purdue* email address. I will not generally attempt to contact you at email addresses other than your Purdue email address. It is your responsibility to check for mail on a regular basis. I recommend checking your Purdue email account at least once every 24 hours.
Special Needs
If you have a disability that requires academic adjustments, please make an appointment to meet with me during the first week of classes to discuss your needs. Please note that university policy requires all students with disabilities to be registered with Adaptive Programs in the Office of the Dean of Students before classroom accommodations can be provided.

Academic Integrity
University policy on academic dishonesty is clear: academic dishonesty in any form is strictly prohibited. Anyone found to be cheating or helping someone else cheat will be referred directly to the Dean of Students for disciplinary action. Penalties are severe and may include dismissal from the University. The risks associated with cheating far outweigh the perceived benefits. Academic dishonesty includes citing someone else's work as your own, using "cheat sheets" or sharing your answers with someone else. If you are unsure whether your planned action constitutes academic dishonesty, seek clarification from your instructor. Other information regarding your rights and responsibilities as a student is contained in the Purdue University Code of Conduct. Writing assignments for this course will be checked for originality using the iThenticate software.

Campus Emergencies
In the unusual event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course visit the course home page, contact me by email or call me at the numbers given at the top.
1. Introduction
   A. Outline, Syllabus, schedule, course style
   B. What is Agricultural Finance and how does it differ from (Corporate) Finance?
   C. What are some finance topics I assume you know?
   D. 7 Most Important Ideas in Finance from Brealey & Myers

2. U.S. Agricultural Credit & Data
   A. Government publications and
   B. U. S. Ag. Credit Institutions
   C. Data and Research Issues

3. Investment under Certainty and Perfect Capital Markets
   A. Obligatory theory about the fundamental issue of where interest rates arise and intertemporal allocation.
   B. Separation theorem and NPV

4. Issues in Capital Budgeting
   A. Introduction
      Importance in small business management
      Pretend assumption of certainty
   B. Term Structure of Interest Rates
   C. Time Value of Money: emphasizing continuous-time factors and growth
   D. part 1. NPV – discussion of various issues
      Meaning of Net Present Value -- PV of 'profit'
      Mathematical marginal NPV of another year
   D. part 2. More NPV issues
      Reinvestment rate underlying NPV
      Difficulties using NPV
      Constraints and indivisibility
      Project life differences
   Small business issues
      Cost of capital
      Pricing fixed resources
      Commodity vs. Differentiated Product investment
      Industry Specific Assets
   E. Meaning of Internal Rate of Return
      Mathematical solution to a polynomial
      Unrecovered balances insights
      Modifications of IRR (IRR is an 'average' rate of return)
      Practical IRR issues
      Multiple sign changes
      Negative last period cash flow
      Cost Minimization situations
      Investment management returns
   F. IRR vs. NPV
NPV profiles
  'Later' cash flow pattern
  Larger investment
Fisher's rate of return (cross-over rate)
Reinvestment rate implied by using IRR
Using IRR to get the same ranking as NPV
G. Inflation and Taxes
  TVM factors incorporating growth in cash flow
  Inflation distortions in accounting
  A component-by-component look at distortions of taxes and inflation in investment NPV's
  Value Invariant Tax Policy
  Implications for small businesses
H. Inclusion vs. Exclusion of Financing Flows in Capital Budgeting
  The problem
  Issues
  The correct approach
  The practical approach
I. Lease Financing
  What would cause a leasing market to exist?
  Discovering the interest rate implicit in a lease
J. Bid Models
  5 Principles of Capital Budgeting
  Examples of bid models
  Potential hazards of bid models
K. Questions of When to Invest
  It is seldom now or never
  The problem -- Is postponement/delay possible?
  Warning signs
  No practical general mathematical formulation
  Examples/cases
  Cost side constant, revenue side increasing
  Length of investment cycle (optimal replacement problems)
L. Uncertainty, NPV, and when to invest
5. Risk Concepts -- (will be included on an as needed basis for the capital structure modeling)
  A. Technical Aspects of expected utility
     Review of some items on expected utility from AGEC 613
     Classic diagram (risk aversion, certainty equivalent, risk premium)
     Some implications of risk aversion
     Risk return tradeoff
     Diversification and portfolio return
  B. Efficiency
  C. Risk Adjusted Discount Rates
CAPM and WACC are not right for non-corporate firms
D. Other
6. Optimal Capital Structure (for a business without access to outside equity)
   A. Leverage and MV Separation theorem
   B. Collins' Model
   C. Liquidity
   D. Contrast with the Corporate Finance Approach (Modigliani-Miller)
7. Modeling Capital Structure
   A. Discrete Stochastic Programming
   B. Probability Modeling (Discrete and Continuous)
   C. Modeling Stochastic Processes
   D. Class DSP Model of Optimal Capital Structure
   E. Previous Applications
8. Farmland Investments, Prices, and Dynamics
   A. Income Capitalization and Bid Models
   B. Land Tenure, Efficient Pricing, Ag. Land in Portfolio Models
   C. Dynamic Land Price Models
9. Futures (possible topic)
   A. Description
   B. Pricing Theory
10. International Finance, cooperatives, insurance (possible topics)