Micro-economic literature in the late 1960's began focusing on the importance of information and initiated the relaxation of the Arrow-Debreu 1950's competitive model assumptions that information is perfect and markets are complete. The Arrow-Debreu model recognized risk but in a very stylized way of defining the prices and quantities that cleared the market under all possible states of nature. The research program on information economics was driven by the desire to make sense out of practical puzzles, on the one hand, and logical extensions to existing models on the other hand. This led to a burgeoning literature on the consequences of asymmetric information, of search, of information as a “commodity,” and of circumstances where markets are likely to be replaced with other forms of institutions and organizations. Concepts such as hidden information, hidden action, signaling, screening, optimum contract, segmentation induced by differential information, pooling and separating equilibrium, and hierarchical internal organizations were formalized.

Consider, for example, the following observations:

“As economic theory has turned more toward the study of information-based market failures, self-reinforcing mechanisms, multiple roles of prices and the general idea of the potential complexity of market interactions, it has inevitably turned to questions that have long exercised development economists”

The study of ... organization is interesting from another perspective. ... we stress the importance of information, incentives, and the existence of limits to contracts.

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These three features acquire importance in the context of missing and imperfect markets – the essential ingredient that complicates real economies. If markets were perfect, we would only have to study supply and demand carefully, and be done with it.”

Coase’s 1937 paper, “The Nature of the Firm” (one of the impetuses to the study of transactions costs and to the transactions approach to modeling in economics), can be thought of as a discussion of the consequences of opportunism, information, and the cost-benefit analysis of alternative approaches to co-ordinating tasks and exchanges.

The economics literature frequently depicts markets and other exchange arrangements as information systems. Much of new institutional economics views institutions as arrangements that have evolved to deal with imperfect information and missing markets.

Empirical work in all areas of agricultural economics has increasingly incorporated information issues into analyses. The role of information is touched upon in several of the graduate courses in Agricultural Economics and Economics, yet is not systematically covered in any of them. This course offers a more systematic and “higher level” treatment of information, illustrating with examples of information issues treated by agricultural and natural resource economists.

The course is based on the notion that 900-level courses in the Department should help students: (a) become familiar with the current literature in specific areas of agricultural economics, particularly on analytic techniques that cut across several fields and (b) develop students’ skills in using these analytic tools to a level where the students can use these techniques in their dissertation (and post-dissertation) research. The course builds on concepts such as the principal-agent problem formulation of asymmetric information issues, the high-exclusion costs of certain types of information, and transaction costs that are first introduced in AEC 800, AEC 810, AEC 841 and EC 812B. These 800-level courses introduce many of the basic concepts shown in the course outline below. The treatment in the 800 level courses, however, is introductory.

AEC 810 discusses basic characteristics of information as a good and implications of those characteristics for the organization of its production. AEC 810 also introduces students to the Williamsonian approach to transaction costs. AEC 841 applies information concepts to the analysis of food system coordination. It looks at the implications of transaction costs for food system organization, views the market as an information system, and introduces the concept of asymmetric information and its implications for contract design. Thus, students coming into AEC 932 should have a basic familiarity with the concepts and be ready to explore how these concepts cut across various fields of agricultural economics and how they can be applied in research.

**Course Organization**

The course will include four components:
(1) Lectures/discussions, with students playing an active role in discussions;
(2) Presentations by faculty of their research that draws on information concepts;
(3) The development and presentation of a research project concept paper by each student; and
(4) Four exercises.
In most cases, the research project concept papers will be drawn from students’ PhD dissertation topics.

**Text and Other Readings**

Inés Macho-Stadler and David Pérez-Castrillo’s *An Introduction to the Economics of Information: Incentives and Contracts* (New York: Oxford University Press, 2nd edition, 2001) covers many of the topics of the course and will serve as key resource in the 1st half of the course. Bernard Salane’s *The Economics on Contracts: A Primer* (MIT Press 1997) also covers similar ground and we will draw on it for examples and applications. We will draw heavily on Yujiro Hayami and Keijuro Otsuka’s *The Economics of Contract Choice: An Agrarian Perspective* (Oxford University Press, 1993) and the 1st five chapters are in the assigned readings. The course also draws on journal articles, research reports, and case studies as would be expected at this level. Debraj Ray’s *Development Economics* (Princeton University Press, 1998) also presents many of the applications in a developing country setting and presents a very accessible overview. Stiglitz provides an excellent overview in his “The Contributions of the Economics of Information to 20th Century Economics”, *QJE*, Nov 2000. Note, the term “contract” is used in the very broad context of the agency literature; the principal, for example, may be an individual, a business, a regulatory agency or the “state” in some more general sense.

Research in all areas of economics has a strong economics of information core. Consider, for example, game theoretic applications; information is the core of these models. Freixas and Rochet’s *Microeconomics of Banking*, MIT Press, 1999 is an example of an application that is built around these concepts. For example, they cover the Stiglitz and Wise “Credit Rationing in Markets with Imperfect Information” *AER* (1981), which we incorporate in our discussions. The Stiglitz - Weiss model shows how adverse selection can lead to backward bending supply curves. Similar applications appear in labor markets.

Copies of the readings that are not available through JSTOR will be available in 213 Agriculture Hall. They will typically be on a CD.

**Prerequisites**

EC 812A and EC 812B
Grading:

Exercises: 20%
Project: 30%
Review of student projects and class participation: 10%
Final Exam. 40%

Course Outline

I. Overview [Week 1]

A. Brief review of Arrow-Debreu assumptions about information in the modeling of the coordination of economic activity and the information content of prices.

B. Information and the evolution of economic institutions (Schotter, Hayak, the new institutional economics and the old).

C. Consequences of relaxing Arrow-Debreu information modeling assumptions to set the stage for the course – particularly, the 1st five weeks:

1. Asymmetric information
   
a. Hidden information
   b. Hidden action
   c. Signaling / screening
   d. Monitoring and contract enforcement
   e. Separating and pooling equilibrium

2. Approaches to limit opportunism
   
a. 3rd party comparisons
      
i. Government standards
      ii. Trade association standards
      iii. *Consumer Reports* – Firms and non-profits providing product testing
   
b. Consumer screening
   
c. Signaling by firms
      
i. Brands
      ii. Guarantees

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D. Some examples of applications

1. Land tenure arrangements (e.g., sharecropping) and the role of rural labor and credit markets (risk, asymmetric information, contracting, signaling, screening, monitoring and monitoring cost, incomplete and missing markets, and how information based market failures in one area flow over into other areas)

2. Contract design /price discovery (e.g., tournaments contracts in crop and livestock production contracts, in management of multi-plant firms, and in employment)

3. Consequences of the replacement of transparent “auction like” commodity markets with contracts on the erosion of public information

4. Grades/standards, quality evaluation, and advertising

5. Food safety regulation/food labeling

6. Design of market information systems in developing countries

7. Buy/make decisions; franchising

8. Partnerships; business alliances; joint ventures

E. Is there a post Arrow-Debreu general equilibrium synthesis in the face of relaxing the perfect information and missing markets assumptions?

II. Consequences of asymmetric information for contract design and exchange. Work through the basics. Read and discuss some of the classics in the literature. Use applications including those from agricultural economics to make concepts more concrete. Pay some in-class games to illustrate concepts [Weeks 2 - 8]

A. Simple benchmark base model in which the assumption the “principal” and “agent” have the same the same information (Stadler and Pérez-Castrillo, Chs 1 and 2)

B. Moral hazard problem: the agent’s behavior is not verifiable by the principal (Read Stadler and Pérez-Castrillo, Ch. 3; Hayami and Otsuka, Chs 2 - 5 (an application that has to deal with the consequences of hidden action, hidden information, signaling, and consequent incomplete and missing markets. Skim 1st time through for an overview and sense of competing theories. Read Stiglitz, "Incentives and Risk Sharing in Sharecropping", Review of Economic Studies, 41 (2), 219-56. We are making extensive use of sharecropping as an example since it has one of the most extensive literature's covering imperfect information and missing markets, with both competing theories and substantial empirical work.

C. The adverse selection problem: the principal has less information, at the signing of the contract, on one or more characteristics influencing the value of the contract


E. Interlinked transactions to deal with incomplete markets. Read Hayami and Otsuka, Ch. 5 and Ray’s “Agricultural Markets” chapters. Agricultural specialization/subsistence decisions in the context of missing markets in developing countries.

F. Synthesis and discussion. Ongoing research at MSU that draws on the concepts we’ve read about and discussed.

III. Implicit expected utility maximization and bounded rationality: Transaction-Cost approaches (post-Coasian approaches—e.g., Williamson). Although we have talked some about transaction costs up to now, we have done so within the assumption of utility maximization under “complete rationality.” There is a parallel literature on transactions cost economics (building on the work of Coase, Williamson, and others) that has in some ways developed in parallel with the information economics approaches. These transaction cost approaches assume that actors operate under bounded rationality rather
than complete rationality, and the analysis focuses on the transaction as the unit of observation. The approaches also draw on management literature that, unlike the literature we have looked at to date, go beyond treating the firm as a “black box” and address internal firm organization and how it affects information flows. This section of the course explores these approaches in some depth (which we assume students have already been introduced to in AEC 800, AEC 810, and AEC 841) and compares and contrasts them with the information-economics literature as exemplified in the Macho-Stadler/Perez-Castillo book.

The literature we will explore next also differs from the preceding literature in additional ways: often it is presented in a less mathematically formalized fashion and attempts to analyze how transaction costs affect a broader set of institutions and public policy than just bilateral contracts. The fundamental assumption of the analysis, however, is imperfect information, leading to transaction costs.

Assumed background reading for this section is the following:


A. Transaction costs and the structure of the firm. We begin with Coase, his formulation of transaction costs, and how it has been interpreted with respect to the theory of the firm. Key to this approach is the view of the firm as “a nexus of contracts.”


Skim the classic articles by Alchian and Demsetz, Jensen and Meckling, and Fama:


**B. Extending the approach—Merging more neoclassical approaches to analyzing imperfect information with organizational theory and greater use of bounded rationality.** The focus here is on analyzing the impact of transaction costs on economic coordination and the design/evolution of economic institutions.


**E. Transaction Costs and Analysis of Political Institutions.** North and others have taken the basic notions of transaction costs developed by Coase and extended the analysis of political institutions. These readings explore those applications.


V. Policies and programs to reduce information asymmetries, and their possible consequences. Up to now in the course, we have analyzed ways of designing contracts, institutions and organizational structures to deal with incomplete information. An alternative approach (sometimes complementary to, sometimes a substitute for, the approaches we have discussed to date) is to invest in gathering and diffusing more complete information to the market participants. In this section, we will examine some examples, drawing on current research in the Department.

1. Mandatory price reporting
2. Grades and Standards
3. Design of market information systems, especially in Africa.

Readings to be distributed in class.

VI. Student Presentations