Eco326: Information Economics

Monday 9-11, Spring 2005
http://www.economics.utoronto.ca/board/teaching.html

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Description

This course will study economic interactions where the parties involved posses different information. We investigate the problems this can cause and possible market reactions. One response is to allow the better informed party to undertake an action to signal their type. Applications include labour markets, industrial organisation and corporate finance. A second response is to allow the uninformed party to offer a menu of contracts to separate different types of agents. Applications include insurance markets, price discrimination and auctions.

Prerequisites:

- ECO200Y with 70% or ECO206Y
- ECO220Y or ECO227Y or (STA250H and STA257H) or (STA257H and STA261H).

Grading

There will be two term tests (25% each) and one final (50%). The midterms will be on Jan 31st (week 5) and Feb 28th (week 9). Exams will be open book. Requests for regrades will need to be in writing within one week of the exam being returned. To ensure consistency, I will regrade the entire test, not just a single question.

I will hand out three problem sets, however these will not be collected or graded: students are responsible for their own mastery of the solutions. Collaboration on problem sets is encouraged.

Topics

Some readings are from the following books:

- Mas–Colell, Whinston and Green (1995), *Microeconomic Theory*.
- Salanie (1997), *The Economics of Contracts*.

The following survey is also useful for the signaling and screening topics.

- Riley, J. (2001), "Silver Signals: Twenty-Five Years of Screening and Signaling", Journal of Economic Literature, 432–478.

Introduction to Asymmetric Information (2 weeks)

Asymmetric information introduces inefficiencies. The textbook monopoly problem can be interpreted as one of asymmetric information. Markets can also collapse when agents are privately informed. Warranties can solve these problems, but may not not be feasible.

- Akerlof (1970), "The Market for "Lemons": Quality Uncertainty and the Market Mechanism", Quarterly Journal of Economics, 488-500.
- MWG ch. 13A–13B
- Stiglitz and Weiss (1981), "Credit Rationing in Markets with Imperfect Information", American Economic Review, 393-410.
- Hendel and Lizzeri, (1999), Adverse Selection in Durable Goods Markets, American Economic Review, 1097-1115.
- Myers and Majluf (1984), "Corporate financing and investment decisions when firms have information that investors do not have", Journal of Financial Economics, 187-221.
- Lundberg and Startz (1983), "Private Discrimination and Social Intervention in Competitive Labour Markets", American Economic Review, 340–347.
- The 2001 Nobel Prize was jointly won by Akerlof, Spence and Stiglitz. The press release: http://nobelprize.org/economics/laureates/2001/public.html

Signalling (2 weeks)

One way to overcome the problem of asymmetric information is for the informed party to take an action to signal their type. There are two main types of equilibria in these models. In pooling equilibria all the agents take the same action. More interestingly, if a single–crossing

condition holds, there may be separating equilibria where agent can successfully signal their private information.

- Spence, "Job Market Signaling", Quarterly Journal of Economics, 355–374.
- MWG, ch. 13.C or Salanie ch. 4.2
- McAfee (2002), *Competitive Solutions*, ch. 13.
- Stiglitz (1975), "The Theory of 'Screening,' Education, and the Distribution of Income", American Economic Review, 283–300.
- Cho and Kreps (1987), "Signaling Games and Stable Equilibria", Quarterly Journal of Economics, 179–222.
- Milgrom and Roberts (1982), "Limit Pricing and Entry under Incomplete Information: An Equilibrium Analysis", Econometrica, 443–460.
- Milgrom and Roberts (1986), "Price and Advertising Signals of Product Quality", Journal of Political Economy, 796–821.
- Leland and Pyle (1977), "Informational asymmetries, Financial structure and Financial intermediation", Journal of Finance, 371–387.

Cheaptalk (1 week)

What happens if a signal is costless? If agents interests coincide then the informed party may voluntarily release their private information. However, when interests are disparate, little communication will be feasible. We also consider a related model where agents can hide their information, but cannot lie. This leads to a surprisingly different result.

- Salanie ch. 4.3.
- Crawford and Sobel (1982), "Strategic Information Transmission", Econometrica, 1431–1451.
- Pitchik and Schotter (1987), "Honesty in a Model of Strategic Information Transmission", American Economic Review, 1032–1036.
- Milgrom and Roberts (1986), "Relying on the Information of Interested Parties", The RAND Journal of Economics, 18–32.

Screening: Single Agent (2 weeks)

Another way to overcome the problem of asymmetric information is for the uninformed party to offer a menu of contracts that cause different types of agents to choose different contracts.

- Salanie ch. 2–3.
- Stiglitz (1977), "Monopoly, Non-Linear Pricing and Imperfect Information: The Insurance Market", Review of Economic Studies, 407–430.
- Mussa and Rosen (1978), "Monopoly and Product Quality", Journal of Economic Theory, 301–317.
- Riley and Zeckhauser (1983), "Optimal Selling Strategies: When to Haggle, When to Hold Firm", Quarterly Journal of Economics, 267–289.

Screening: Many Agents (2 weeks)

Many possible applications involve several informed agents. We then need to consider outcomes that can be implemented as a dominant strategy, or at least as a Bayesian Nash equilibrium.

- MWG ch. 23.
- Milgrom (1989), "Auctions and Bidding: A Primer", Journal of Economic Perspectives, 3-22.
- Salanie ch. 3.2.2. (on Auctions)

Competitive Screening (1 week)

What happens if there are multiple uninformed agents all designing screening contracts?

- MWG ch. 13.D or Salanie ch. 3.3.1.
- Rothschild and Stiglitz (1976) "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information", Quarterly Journal of Economics, 629-649.

Signal Jamming (1 week)

Sometimes an agents' type may be visible, but agents have the ability to change other agents' perceptions by taking an action. This is called signal jamming.

- Holmstrom, (1999) "Managerial Incentive Problems: A Dynamic Perspective", Review of Economic Studies, 169-82.

- Fudenberg and Tirole (1986), "A 'Signal-Jamming' Theory of Predation", The RAND Journal of Economics, 366–376.

Costly State Verification (1 week)

Suppose the uninformed agent can observe the informed agents type, but at a cost. A classic result says the optimal way to finance a project is through debt.

- Hart (1995), *Firms, Contracts and Financial Structure*, 121–125.

Herding (1 week)

Suppose many agents have private information. Agents make decisions sequentially and can observe the actions previously taken. In these situations a herd may develop, where all agents take the same action and ignore their own information.

- Banerjee (1992), "A Simple Model of Herd Behavior", Quarterly Journal of Economics, 797–817.
- Bikhchandani, Hirshleifer and Welch (1998), "Learning from the Behavior of Others: Conformity, Fads, and Informational Cascades", Journal of Economic Perspectives, 151-170.
- Gul and Lundholm (1995), "Endogenous Timing and the Clustering of Agents' Decisions", Journal of Political Economy, 1039–1066.

Moral Hazard (2 weeks)

This final topic changes the emphasis from hidden information to hidden actions. What happens when a manager cannot observe how much effort an employee exerts? What's the best they can do? This is a powerful idea explaining why car insurance requires deductables and why unemployment insurance rarely works.

- Salanie ch. 5
- MWG ch. 14.B
- Milgrom and Roberts, *Economics, Organization and Management*, ch. 7.