

Econ 421: Incentives, Information and Markets

Winter 2018

Professors: Simon Board and Moritz Meyer-ter-Vehn

Emails: sboard@econ.ucla.edu and mtv@econ.ucla.edu

Class: TR 9:30-10:45am, PA 2232.

Office hours: TR 1-2pm, Bunche 9353 (Board), 9365 (MtV)

TA: Felipe Carrera,

Email: fcarrera@g.ucla.edu

Section (selected weeks): T 11:00-12:15pm, PA 1222

Office hours: M 11-1, Alper Room

Overview

The purpose of economics is to understand the functioning of markets. In the traditional neoclassical model, agents face prices and choose how much to demand or supply. Prices are then set to equate supply and demand, resulting in an efficient allocation of resources. In practice, markets do not perform as well as in this idealized model.

The market for healthcare, for example, has two large problems. The first is *moral hazard*. When an individual undergoes a medical procedure they only pay a fraction of the bill, leading them to demand more procedures than if they were to pay with their own money. Insurance companies try to manage this moral hazard problem by requiring co-pays and deductibles, but must balance the incentive effects against the risk imposed on customers. A second problem is *asymmetric information*. Healthy people know that they will have low expenses over the coming year, and therefore often opt out of insurance or choose a bare-bones plan. As these healthy individuals leave the insurance pool, premiums rise for others, causing even more patients to opt out. Asymmetric information can induce a death spiral, leading to the inefficient outcome where nobody is insured.

This class introduces students to the concepts of information economics that lie at the heart of modern economics and applies them to the economics of insurance, industrial organization, and personnel. We study theoretical models and the functioning of actual markets, and ask whether we can design policies that improve market outcomes. Broadly, the class teaches students about the role of models in economics, and how to tie data and theory together.

Evaluation

The aim of this class is to transition students from understanding formal models to using these models to think about practical problems. With this in mind, the evaluation consists of three parts.

1. Three homework assignments [15% each].

- Homeworks consist of mathematical problems to ensure students understand the formal concepts being introduced in class.
- Students are allowed to discuss problems with one another, but solutions must be written up individually.
- These will be due on Tue Jan 30 (Week 4), Tue Feb 20 (Week 7) and Tue Mar 13 (Week 10).

2. In class presentation of an empirical paper [15%]

- This aims to help students become consumers of research.
- Students will form groups of three, and give a 10-minute presentation. The Appendix of this syllabus presents a list of possible papers.
- If you have a group of three people, let us know by Thu Feb 1st (week 4), 11am. Remaining people will be matched randomly.
- Students need to pick papers by Thu Feb 8th (week 5), and the presentations will start in week 6 through the end of the quarter.
- Generally, the order of presentations will correspond to the order in which we cover the corresponding material in lectures.

3. Research paper on a problem related to this class [40%]

- This has the goal of preparing students to conduct their own research.
- Students will form groups of three. The paper might survey a public policy issue and write about possible solutions. It might do qualitative and quantitative research on a novel contracting problem. We're ultimately looking for something that is interesting and teaches us about the issue at hand.
- A one-page proposal for the paper is due by Thu Feb 15th (week 6).
- The paper is due at the end of week 10 (Fri Mar 16th, 11:59pm) via TurnItIn on myUCLA. Each group should only turn in one copy.

Important dates:

- Tue Jan 30 (Week 4): HW 1 due
- Thu Feb 1 (Week 4): Provide group names
- Thu Feb 8 (Week 5): Pick paper to present
- Tue Feb 13 (Week 6): Presentations start
- Thu Feb 15 (Week 6): Paper proposal due
- Tue Feb 20 (Week 7): HW2 due
- Tue Mar 13 (Week 10): HW3 due
- Fri Mar 16 (Week 10): Paper due by 11:59pm.

0. Introduction: What is Information Economics? [1 class, MtV]

- Hayek (1945), "The Use of Knowledge in Society", AER.
- Arrow (1963), "Uncertainty and Welfare Economics of Medical Care", AER.

1. Moral Hazard (with applications to Personnel Economics)

When a firm hires a worker to work for them, the employee has considerable discretion how hard to work, how much risk to take on, and how much to invest in their skills. All of these activities are central to the performance of the firm, and so it is important to induce the employee to act in the firm's best interest. We look at four aspects of this problem.

Books, Surveys

- Gibbons (1998), "Incentives in Organizations", JEP.
- Milgrom, Roberts (1992), "Economics, Organization and Management", Prentice-Hall
- Prendergast (1999), "The Provision of Incentives in Firms", *Journal of Economic Literature*.
- Salanie (1997), "The Economics of Contracts", MIT Press.

1.1. Performance-Pay and the Incentive-Risk Trade-off [4 Classes; MtV]

In some occupations, employers address moral hazard by directly tying pay to performance. But this leads to other problems, notably exposing the employee to risk if he does not control the performance measure perfectly.

Theory references

- Holmstrom (1979), "Moral Hazard and Observability," *Bell Journal*.
- Innes (1990), "Limited Liability and Incentive Contracting with Ex-ante Action Choices," *Journal of Economic Theory*.
- Milgrom, Roberts (1992), "Economics, Organization and Management", Prentice-Hall, Ch 6-7.

Applied references

- Chevalier and Ellison (1997), "Risk Taking by Mutual Funds as a Response to Incentives", *Journal of Political Economy*.
- Hall, Lazear, Madigan (2001), "Performance Pay at Safelite Autoglass (A)", HBS. <http://cb.hbsp.harvard.edu/cbmp/access/72365088>
- Hartzell, Parsons, Yermack (2010), "Is a Higher Calling Enough? Incentive Compensation in the Church", *Journal of Labor Economics*.
- Larkin (2014), "The Cost of High-Powered Incentives: Employee Gaming in Enterprise Software Sales", *Journal of Labor Economics*.
- Lazear (2000), "Performance, Pay and Productivity", *American Economic Review*.
- Prendergast (2002), "The Tenuous Tradeoff between Risk and Incentives", *Journal of Political Economy*.

1.2. Performance Measurement and Multi-tasking [2 classes; Board]

One critical issue when paying for performance is how to measure performance. Even the simplest tasks typically have a quantity and a quality dimension, and so piece-rates, say, risk compromising quality. We study how to design incentives when there are different tasks, some of which are hard to measure or may be gamed by employees.

Theory references

- Gibbons, "Lecture Note 1: Agency Theory".
- Milgrom, Roberts (1992), "Economics, Organization and Management", Prentice-Hall, Ch 7.
- Baker (1992), "Incentive Contracts and Performance Measurement", *Journal of Political Economy*.
- Gibbons (1998), "Incentives in Organizations", *Journal of Economic Perspectives*.
- Holmstrom and Milgrom (1991), "Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design," JLEO.

Applied references

- Kerr (1975), "On the Folly of Rewarding A, while Paying for B", *Academy of Management*.
- Muralidharan, Sundararaman (2011), "Teacher Performance Pay: Experimental Evidence from India", *Journal of Political Economy*.
- Glewwe, Ilias and Kremer (2010), "Teacher Incentives", *American Economic Journal: Applied Economics*.
- Jacob (2005), "Accountability, incentives and behavior: the impact of high-stakes testing in the Chicago Public Schools", *Journal of Public Economics*.
- Jacob and Levitt (2003), "Rotten Apples: An Investigation of the Prevalence and Predictors of Teacher Cheating", *Quarterly Journal of Economics*.
- Bartel, Cardiff-Hicks and Shaw (2016), "Incentives for Lawyers: Moving Away from 'Eat What You Kill'", *Industrial Labor Relations Review*.

1.3. Teamwork and Team Incentives [2 classes; Board]

Specialization and the division of labor is the ultimate source of productivity. To realize these gains, workers must be incentivized to work with one another, rather than free-ride on others effort. Team incentives can also be used when agents work independently, to lower risk and increase competition.

Theory references

- Alchian, Demsetz (1972), "Production, Information Costs and Economic Organization", *American Economic Review*.
- Holmstrom (1982), "Moral Hazard in Teams," *Bell Journal*.
- Lazear, Rosen (1981), "Rank-order Tournaments as Optimum Labor Contracts", *Journal of Political Economy*.

Applied references

- Bandiera, Barankay, Rasul (2005), "Social Preferences and the Response to Incentives: Evidence from Personnel Data", *Quarterly Journal of Economics*.
- Knez, Simester (2001), "Firm-Wide Incentives and Mutual Monitoring at Continental Airlines," *Journal of Labor Economics*.

1.4. Long-term Incentives: Investment and Efficiency Wages [3 classes; Board]

Employment relationships are typically long-lived, meaning that firms must also incentivize employees to invest in their skills, and invest in maintaining capital equipment. Such long-lived relationships also generate incentives since employees are motivated by the desire to keep their jobs.

Theory references

- Becker (1962), "Investment in Human Capital: A Theoretical Analysis", *Journal of Political Economy*.
- Grossman, Hart (1986), "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration", *Journal of Political Economy*.
- Shapiro and Stiglitz (1984), "Equilibrium Unemployment as a Worker Discipline Device," *American Economic Review*.
- Levin (2003), "Relational Incentive Contracts," *American Economic Review*.
- Garicano, Rayo (2017), "Relational Knowledge Transfers", *American Economic Review*.

Applied References

- Berg, Fast (1975), "The Lincoln Electric Company", HBS. <http://cb.hbsp.harvard.edu/cbmp/access/72365088>
- Capelli and Chauvin (1991), "An Interplant Test of the Efficiency Wage Hypothesis", *Quarterly Journal of Economics*.
- Krueger (1991), "Ownership, Agency, and Wages: An Examination of Franchising in the Fast Food Industry", *Quarterly Journal of Economics*.
- Baker, Hubbard (2004), "Contractibility and Asset Ownership: On-Board Computers and Governance in U.S. Trucking," *Quarterly Journal of Economics*.
- Roy (1952), "Quota Restriction and Goldbricking in a Machine Shop", *American Journal of Sociology*.

2. Asymmetric Information (with applications to Insurance, Pricing and Labor markets)

When two parties wish to trade, one party may know more than the other. In particular, they may know about their willingness to pay for the product (the “private values” case) or about the quality of the product being traded (the “common values” case). We study both in turn.

Books, Surveys

- Salanie (1997), “The Economics of Contracts”, MIT Press.
- Stole (2001), “Lecture Notes on the Theory of Contracts and Organizations”, Online.

2.1. Private Values: Pricing and Bargaining [3 classes; Board]

One of the central assumptions of neoclassical economics is that participants are price takers. When firms have market power but are uncertain about consumers’ preferences, the allocation of resources will typically be inefficient. We examine how such private information affects the performance of markets.

Theory references

- Mussa, Rosen (1979), “Monopoly and Product Quality,” *Journal of Economic Theory*.
- Textbooks treatment of nonlinear pricing, e.g. Stole (2001, p 60-68),
- Bulow (1982), “Durable-goods Monopolists,” *Journal of Political Economy*.

Applied references

- Einav, Farronato, Levin, Sundaresan (forthcoming), “Auctions versus Posted Prices in Online Markets,” *Journal of Political Economy*.

2.2 Adverse Selection and Signaling [3 classes; MtV]

In many markets, one side has private information that directly impacts the gain the other side obtains from the trade. For example, in health insurance, the customer knows how healthy they are, and whether they have pre-existing conditions. We study such markets in theory and practice.

Theory references

- Mas-Colell, Whinston, Green (1995), “Microeconomic Theory”, Oxford University Press, Ch 13
- Akerlof (1970), “The market for ‘lemons’: Quality uncertainty and the market mechanism”, *Quarterly Journal of Economics*.
- Spence (1973), “Job Market Signaling”, *Quarterly Journal of Economics*.
- Leland and Pyle (1977), “Informational Asymmetries, Financial Structure, and Financial Intermediation”, *Journal of Finance*.
- Rothschild, Stiglitz (1976), “Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information,” *Quarterly Journal of Economics*.

Applied references

- Cutler and Reber (1998), "Paying for Health Insurance: The Trade-off between Competition and Adverse Selection", *Quarterly Journal of Economics*.
- Finkelstein and McGarry (2006), "Multiple Dimensions of Private Information: Evidence from the Long-Term Care Insurance Market", *American Economic Review*.
- Finkelstein, Poterba (2004), "Adverse Selection in Insurance Markets: Policyholder Evidence from the U.K. Annuity Market", *Journal of Political Economy*.
- Bedard (2001), "Human Capital versus Signaling Models: University Access and High School Dropouts", *Journal of Political Economy*.

2.3 Dynamic Incentives and Career Concerns [2 classes; MtV]

We combine the dynamic perspective from Section 1.4 with the idea of private information in Section 2. We find that the desire for a good reputation generates incentives for effort and that firms may try to use long-term contracts to mitigate the "unraveling" problem. These ideas underlie the healthcare mandate in Obamacare.

Theory references

- Harris, Holmstrom (1982), "A Theory of Wage Dynamics," *Review of Economic Studies*.
- Holmstrom (1999), "Managerial Incentive Problems: A Dynamic Perspective," *Review of Economic Studies*.
- Janssen, Roy (2002) "Dynamic Trading in a Durable Good Market With Asymmetric Information." *International Economic Review*.

Applied references

- Hendel, Lizzeri (2003), "The Role of Commitment in Dynamic Contracts: Evidence from Life Insurance", QJE.
- Chevalier, Ellison (1999), "Career Concerns of Mutual Fund Managers," *Quarterly Journal of Economics*.

Appendix: Additional Empirical Papers

Here we list additional empirical papers that students can use for their presentations. On occasion, we may also draw additional material from this list.

1.1 Moral Hazard and Performance Pay

- Akerberg, Botticini (2002) "Endogenous Matching and the Empirical Determinants of Contract Form", *Journal of Political Economy*.
- Aggarwal, Samwick (1999), "The Other Side of the Tradeoff: The Impact of Risk on Executive Compensation", *Journal of Political Economy*.
- Aron-Dine, Einav, Finkelstein (2013), "The RAND Health Experiment: Three Decades Later", *Journal of Economic Perspectives*.
- Bandiera, Barankay, Rasul (2007), "Incentives for Managers and Inequality Among Workers: Evidence from a Firm Level Experiment." *Quarterly Journal of Economics*.
- Baker, Jensen, Murphy (1998), "Compensation and Incentives: Practice vs Theory", *Journal of Finance*.
- Benson (2015), "Do Agents Game Their Agents' Behavior? Evidence from Sales Managers", *Journal of Labor Economics*.
- Bertrand, Mullainathan (2001), "Do CEOs Set Their Own Pay? The Ones Without Principals Do," *Quarterly Journal of Economics*.
- Bertrand, Mullainathan (2002), "Enjoying the Quiet Life? Corporate Governance and Managerial Preferences," *Journal of Political Economy*.
- Clemens, Gottlieb (2013), "Do physicians' financial incentives affect medical treatment and patient health?" *American Economic Review*.
- Duflo, Hanna and Ryan (2012), "Monitoring works: Getting teachers to come to school", *American Economic Review*.
- Einav, Finkelstein (2017), "Moral Hazard in Health Insurance: What we know and how we know it", *Journal of European Economic Association*.
- Ferrall, Shearer (1999), "Incentives and Transactions Costs Within the Firm: Estimating an Agency Model Using Payroll Records," *Review of Economic Studies*.
- Gabaix, Landier (2008), "Why Has CEO Pay Increased So Much?" *Quarterly Journal of Economics*.
- Oyer, (1998) "Fiscal Year Ends and nonlinear Incentive Contracts: The Effect of Business Seasonality", *Quarterly Journal of Economics*.
- Shearer (2004), "Piece Rates, Fixed Wages and Incentives: Evidence from a Field Experiment," *Review of Economic Studies*.
- Staten, Umbeck (1982), "Information Costs and Incentives to Shirk: Disability Compensation of Air Traffic Controllers", *American Economic Review*.
- Tervio (2008), "The Difference that CEOs Make: An Assignment Model Approach," *American Economic Review*.

1.2 Performance Measurement

- Dranove, Kessler, McClellan, Satterthwaite (2003), "Is More Information Better? The Effects of 'Report Cards' on Health Care Providers," *Journal of Political Economy*.
- Courty, Marschke (2004), "An Empirical Investigation of Gaming Responses to Explicit Performance Incentives," *Journal of Labor Economics*.
- Cockburn, Henderson, Stern (1999), "Balancing Incentives: The Trade-off between Basic and Applied Research", *NBER*.
- Hong, Hossain, List, Tanaka (2018), "Testing the Theory of Multitasking: Evidence from a Natural Field Experiment in Chinese Factories", *International Economic Review*.
- Dumont, Fortin, Jacquement, Shearer (2008), "Physicians' Multitasking and Incentives: Empirical Evidence from a Natural Experiment," *Journal of Health Economics*.

1.3 Teamwork

- Boning, Ichniowski, Shaw (2007), "Opportunity Counts: Teams and the Effectiveness of Production Incentives," *Journal of Labor Economics*.
- Carpenter, Matthews, Schirm (2010), "Tournaments and Office Politics: Evidence from a Real Effort Experiment", *American Economic Review*.
- Drago, Garvey (1998), "Incentives for Helping on the Job: Theory and Evidence", *Journal of Labor Economics*.
- Eriksson (1999), "Executive Compensation and Tournament Theory: Empirical Tests on Danish Data." *Journal of Labor Economics*.
- Falk, Ichino (2005), "Clean Evidence on Peer Effects." *Journal of Labor Economics*.
- Friebe, Heinz, Krueger, Zubanov (2017) "Team Incentives and Performance: Evidence from a Retail Chain", *American Economic Review*.
- Hamilton, Nickerson and Owan (2003), "Team Incentives and Worker Heterogeneity: An Empirical Analysis of the Impact of Teams on Productivity and Participation," *Journal of Political Economy*.
- Ichino, Maggi (2000), "Work Environment and Individual Background: Explaining Regional Shirking Differentials in a Large Italian Firm." *Quarterly Journal of Economics*.
- Knez and Simester (2001), "Firm-Wide Incentives and Mutual Monitoring at Continental Airlines", *Journal of Labor Economics*.
- Knoeber (2007), "A Real Game of Chicken: Contracts, Tournaments, and the Production of Broilers." *Journal of Law Economics and Organization*.
- Mas, Moretti (2007), "Peers at Work." *American Economic Review*.

1.4 Long-Term Incentives

- Acemoglu, Pischke (1998), "Why do Firms Train: Theory and Evidence," *Quarterly Journal of Economics*.
- Azouly (2004), "Capturing Knowledge within and across Firm Boundaries: Evidence from Clinical Development," *American Economic Review*.
- Fang, Gavazza (2011), "Dynamic Inefficiencies in an Employment-Based Health-Insurance System: Theory and Evidence," *American Economic Review*.

- Lazear, Shaw, Stanton (2016), "Making Do with Less: Working Harder during Recessions", *Journal of Labor Economics*.
- Raff, Summers (1987), "Did Henry Ford Pay Efficiency Wages" *Journal of Labor Economics*.
- Woodruff, Christopher (2002), "Non-contractible Investment and Vertical Integration in the Mexican Footwear Industry," *International Journal of Industrial Organization*.
- Joskow, Paul (1987), "Contract Duration and Relationship-Specific Investment: Empirical Evidence from Coal Markets," *American Economic Review*.
- Lafontaine (1986), "Agency Theory and Franchising: Some Empirical Results," *RAND Journal of Economics*.
- Greif (1989), "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi traders' coalition", *American Economic Review*.
- Macaulay (1963), "Non Contractual Relations in Business: A Preliminary Study", *American Sociological Review*.
- John, Lang (1991), "Insider Trading around Dividend Announcements: Theory and Evidence," *Journal of Finance*.
- McMillan, Woodruff (1999), "Interfirm Relationships and Informal Credit in Vietnam", *Quarterly Journal of Economics*.
- Autor (2001), "Why do Temporary Help Firms Provide Free General Skills Training?" *Quarterly Journal of Economics*.
- Baker, George and Thomas Hubbard (2003), "Make Versus Buy in Trucking: Asset Ownership, Job Design, and Information." *American Economic Review*.

2.1 Pricing

- Cramton and Tracy (1992), "Strikes and Holdouts in Wage Bargaining: Theory and Data", *American Economic Review*.
- Ayres, Siegelman (1995), "Race and Gender Discrimination in Bargaining for a New Car", *American Economic Review*.
- Grubb (2009), "Selling to Overconfident Consumers", *American Economic Review*.
- Hendricks, Porter (1988), "An Empirical Study of an Auction with Asymmetric Information", *American Economic Review*.
- List (2003), "The Nature and Extent of Discrimination in the Marketplace: Evidence from the Field," *Quarterly Journal of Economics*.
- Lucking-Reiley (1999), "Using Field Experiments to Test Equivalence between Auction Formats: Magic on the Internet," *American Economic Review*.

2.2 Adverse Selection

- Ausubel (2009), "Adverse Selection in the Credit Card Market", WP.
- Chiappori, Salanie (2000), Testing for Asymmetric Information in Insurance Markets", *Journal of Political Economy*.
- Handel (2013), "Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts", *American Economic Review*.

- Handel, Hendel and Whinston (2015), "Equilibria in Health Exchanges: Adverse Selection vs Reclassification Risk", *Econometrica*.
- Handel, Hendel and Whinston (2017), "The Welfare Effects of Long-Term Health Insurance Contracts", *Econometrica*.
- Hendren (2013), "Private Information and Insurance Restrictions", *Econometrica*.
- Karlan, Zinman (2009), "Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment", *Econometrica*.
- DeVaro, Waldman (2012), "The Signaling Role of Promotions: Further Theory and Empirical Evidence", *Journal of Labor Economics*.
- John, Lang (1991), "Insider Trading around Dividend Announcements: Theory and Evidence", *Journal of Finance*.

2.3 Dynamics

- Ligon, Thomas and Worrall (2002), "Informed Insurance Arrangements with Limited Commitment: Theory and Evidence from Village Economies", *Review of Economic Studies*.
- Gibbons, Murphy (1992), "Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence", *Journal of Political Economy*.