ECONOMICS 603 : Spring 2023

Microeconomic Theory II

Michael Magill Kaprielian 316b
Office Hours: Thursday: 2-3:30pm e-mail: magill@usc.edu
Class meeting: M-W 12-1:50pm, KAP 113 TA: Tri Hoang

Course Objective

The objective of this class is to train students in the basic concepts and techniques of modern microeconomic theory, with primary focus on general equilibrium theory in its broadest interpretation. The course covers static GE, and GE with time and uncertainty; complete and incomplete markets; infinite horizon GE; missing markets (public goods and externalities); simple models of asymmetric information and moral hazard.

Grading: weekly problem sets (20%), midterm (35%), final exam (45%).

SUMMARY OUTLINE of COURSE

Preliminary Concepts

Historical Evolution of Economics
Human Behavior and Society: Law, Economics and Politics
Time-uncertainty setting

General Equilibrium

Description of Exchange Economy
General Equilibrium: exchange economy
General Equilibrium: financial markets.
General Equilibrium: production economy
Economics of risk sharing with complete markets

Infinite Horizon

Infinite-lived agents
Overlapping generations

Missing Markets

Public goods
Incentive compatible public choice
Externalities

Asymmetric Information

Adverse selection: signalling
Moral Hazard: principal agent problem

EXTENSIVE COURSE OUTLINE

(1) Historical Evolution of Economics

Mercantilism, classical economics, Keynes-Simon and the modern era.

(2) Human Behavior and Society

Law, economics and political economy as the framework for studying human behaviour in society. Basic axioms about human ability and motivation: bounded rationality and opportunism as a way of understanding the classification of economic theory. (a):Informal theory: transactions cost approach. (b): Formal theory: game theory, asymmetric information and theory of incomplete markets.

(3) Time, uncertainty and information

Idea of event-tree and information partitions on a set of states of nature as basic approach to modelling time, uncertainty and information in economics.

(4) Description of Exchange Economy

Endowments, preferences, representation by utility functions, expected utility preferences.

(5) General Equilibrium: Exchange Economy

Feasible allocations, Pareto optimum, competitive (contingent market) equilibrium, contingent markets. existence of equilibrium. First and Second Welfare Theorems. The gradient conditions for Pareto optimality.

(6) General Equilibrium: Financial Markets

Spot markets and financial contracts. Financial market equilibrium. Special case: Fisher's theory of the rate of interest based on rate of impatience and productivity of capital. CAPM model and valuation of financial securities. Complete and incomplete markets. Nominal versus real securities. Money as a

medium of exchange and how it can influence economic activity. In Arrow-Debreu theory money has no role to play --- hence its complete absence in conventional microeconomic theory. Incomplete markets as a way of linking traditional microeconomic theory to macroeconomics. Extending such models to intertemporal setting with many periods: informational efficiency and random behavior of security prices.

(7) General Equilibrium: Production Economy

Firms technology sets, profit max problem, supply functions, ownership of firms, competitive (contingent market) equilibrium for production economy (recall modified budget sets for agents from firms' profits). Existence of equilibrium (idea only). First and Second Welfare Theorems. The gradient conditions for Pareto optimality.

(8) Infinite Horizon GE: infinite-lived agents

Arrow-Debreu equilibrium. Sequential market equilibrium, spot-financial markets. Stationary markov equilibrium.

(9) Infinite Horizon GE: overlapping generations

Basic Gale model with 2 period-lived agents: Golden Rule.

(10) Economics of Risk Sharing with Complete Markets

Expected utility preferences, Pareto optimum maximizes weighted sum of utility functions subject to feasibility. Representative agent analysis, one of the fundamental techniques of modern macroeconomics. Additive separability permits interchange of summations. Each agent's equilibrium consumption is an increasing function of aggregate output .

(11) Public Goods (Missing Markets I)

One public and one private good economy. Provision of indivisible public good, willingness to pay, Pareto efficient provision of public good. Provision by subscription and by majority voting. Provision of perfectly divisible public good. Pareto optimum, first order conditions for Pareto optimum. Personal prices and Lindahl equilibrium. Subscription equilibrium. Personal prices as tax rates: problem of free-riders and revelation of preferences. The Clarke-Groves and pivot mechanism for truthful revelation of preferences. Provision by majority voting.

(12) Externalities (Missing Markets II)

Two outputs, one input economy with production externality: proportional tax restores optimality of outputs. Consumption externalities. Property rights and the Coase theorem.

(14) Adverse Selection

Insurance problem with two states, expected utility preferences. Monopolist selling insurance: high and low risk agents. Complete information contracts charge agents maximum risk premium. Incomplete (asymmetric) information contract design is a principal agent problem for monopolist (incentive constraints). Competitive insurance market: zero expected profit: no pooling equilibrium: separating equilibrium if sufficiently high proportion of high risk agents. Lemons problem and signalling: when does it pay for agents to invest in a signal indicating their type.

(15) Moral Hazard

The principal-agent problem: effort, incentives and efficiency. Finitely many actions and outcomes: incentive constraints and interpretation of first order conditions. Optimal wage contracts. Monotone likelihood ratio property. Moral hazard and the limits of insurance.

REFERENCES

Textbook for the Course

MAS-COLLEL, A., M.D. WHINSTON and J.R. GREEN, *Microeconomic Theory*, Oxford University Press, 1996.

Recommended Texts

MAGILL, M. and QUINZII, M., *Theory of Incomplete Markets*, Volume 1, MIT Press, 1996.

KREPS, D., *A Course in Microeconomic Theory*, Princeton University Press, 1995.

VARIAN, H.R., *Microeconomic Analysis*, Norton and Company, Third Edition, 1995.

Other Textbooks

LAFFONT, J-J, *Fundamentals of Public Economics*, MIT Press, 1988.

LAFFONT, J-J, *Economic of Uncertainty and Information*, MIT Press, 1988.

TIROLE, J., *The Theory of Industrial Organization*, MIT Press, 1989.

FUDENBERG, D. and TIROLE, J., *Game Theory*, MIT Press, 1991.

RASMUSEN, E., *Games and Information*, Blackwell, 1989.

HUANG and LITZENBERGER, *Fundamentals of Finance*, North-Holland,1989.

DEBREU, G., *Theory of Value*, New York, Wiley, 1959.

MILGROM, P. and J. ROBERTS, *Economics, Organizational and Management*, Prentice-Hall, 1992.

HILDENBRAND, W. and A. KIRMAN, *Equilibrium Analysis*, Amsterdam, North-Holland. (1988),

MARSHALL, A., *Principles of Economics*, London, MacMillan ,1920.

WALRAS, L., *Elements of Pure Economics*, translation of *Elements d'economie politique pure*, 1875.

SMITH, A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, 1776, reprinted by Oxford University Press,1976.

Selected Classical Papers

Akerlof, G. (1970). ``The Market for Lemons: Quality uncertainty and the market mechanism," *Quarterly Journal of Economics*, 89, 488-500.

Coase, R. (1937). ``The Nature of the Firm," *Economica*.

Coase, R. (1960). ``The Problem of Social Cost," *Journal of Law and Economics*, 3, 1-44.

Hayek, F.A., ``The Use of Knowledge in Society," *American Economic Review*, vol. 35, 1945 pp. 519-530.

Rothschild, M. and Stiglitz, J. (1976). ``Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information," *Quarterly Journal of Economics*, 80, 629-649.

Spence, M., Job Market Signalling, (1974) *Quarterly Journal of Economics*, pp. 355-374.

Students are expected to be familiar with the following :

MATERIAL COVERED IN MICROECONOMIC THEORY I (503)

Textbooks for the Course

MAS-COLLEL, A., M.D. WHINSTON and J.R. GREEN, *Microeconomic Theory*, Oxford University Press, 1996.

VARIAN, H.R., *Microeconomic Analysis*, Norton, 1992.

NICHOLSON, W., *Microeconomic Theory*, Dryden Press, 1989.

BRIEF SUMMARY OF TOPICS

Theory of Consumer

preferences (hypotheses on …)
representation of preferences by utility function
consumers choice problem on system of static markets
expenditure function and indirect utility function
consumers surplus
Slutsky equation
inverse demand functions

Theory of Firm

technology sets (hypotheses on …)
firms choice problem on system of static markets
average and marginal costs
long and short-run cost curves
properties of firms optimal plan as function of prices

Partial Equilibrium on Single Market

assumptions required to validate partial equilibrium analysis
monopoly solution
competitive solution

Mathematical Techniques

constrained maximum problems (Kuhn-Tucker Theorem)
envelope theorem
gradients and tangent hyperplanes
convexity
second order conditions
elements of linear algebra (plus Cramer's rule)
implicit function theorem
solving systems of equations
types of functions: additively separable, homogeneous…

Some Useful Math-Econ Textbooks

INTRILIGATOR, M., *Mathematics for Economists*, Academic Press,1971.

SIMON,C.P. and L. BLUME, *Mathematics for Economists*, Norton,1993.

I recommend that you all have a good book on Calculus and another on Linear Algebra: more generally you should be on the lookout for good books in the many areas of modern mathematics that you will encounter on your journey through Economics : probability theory, statistics, differential equations, …