Brown University

Economics 2050, Microeconomics I

Fall 2018

Professor: Roberto Serrano

Teaching Assistant: Ricardo Fonseca

General References

The primary reference is:

Mas-Colell, A., M. Whinston and J. Green (1995), *Microeconomic Theory*, Oxford University
Press, Oxford.

Another reference, which we shall also use in the second part of the course, is:

Feldman, A. and R. Serrano (2006), *Welfare Economics and Social Choice Theory*, 2nd edition,
Springer, New York.

A reference alternative to Mas-Colell et al, but much more compressed, is:

Jehle, G. and P. Reny (1998), *Advanced Microeconomic Theory*, Addison-Wesley, Reading, MA.

Finally, classic references for your microtheory personal library are:

Varian, H. (1982), *Microeconomic Analysis*, 2nd edition, Norton, New York.

Debreu, G. (1959), *Theory of Value*, Wiley, New York.

Arrow, K. and F. Hahn (1971), *General Competitive Analysis*, North Holland, New York.

Other issues:

Undergraduates: If you are an undergraduate student considering taking this class, please talk to me during the first week of the semester in order to discuss the specifics of your case.

Academic integrity: I expect you to uphold the highest standards in terms of academic integrity. I take cheating on assignments or exams very seriously.

Special accomodations: if, due to a certified disability, you require special accomodations, please contact me as soon as possible. I want to make sure that every student is included and given full access and opportunity in the course.

Estimates of time allocation: The following is an estimate of the time allocation required for the course. Needless to say, following these estimates is neither necessary nor sufficient to do well in the course. That is, there will be students able to master the material perfectly with fewer hours, while on the other hand, arguing to the instructor that one has spent the suggested hours on the course will not be a consideration to determine the final grade. With these caveats, here are the estimates. Over 14 weeks, students will spend 3 hours per week in class (42 hours total), and 1 hour per week in discussion section (14 hours). Homework, reading, and studying for the midterm examinations will take approximately 7 hours per week (98 hours total). In addition, there is a 3-hour final exam for which approximately 25 hours of review –5 hours for each of 5 days– is assumed.

Syllabus

1. Classical Consumer and Producer Theories (Mas-Colell et al.'s Chapters 2-5):

    Choice-based consumer theory and the weak axiom of revealed preference.

    Preference-based consumer theory and utility.

    Duality.

    Aggregation.

    Producer theory.

2. General Equilibrium, Welfare Economics, Social Choice and Implementation (Mas-Colell et al.'s Chapters 10, 15-17, 19, 21 and 23; see also Feldman and Serrano's Chapters 2-6 and 13-15):

    General equilibrium: exchange and production.

    Equilibrium, efficiency and the core: the welfare theorems.

    Existence of equilibrium.

    Local uniqueness and regular economies.

    Arbitrary aggregate excess demand and uniqueness of equilibrium.

    General equilibrium under uncertainty.

    Social choice.

    Mechanism design and implementation.

List of Topics in each Lecture

Class 1: Choice-based consumer theory. Commodities. The consumption set. Properties of consumption sets. The budget set. The ordinary or Walrasian demand correspondence and its basic properties.

Class 2: Comparative statics of demand. Wealth and price effects. The matrix of price effects. Restrictions on wealth and price effects: Euler's condition, Engel and Cournot aggregation conditions. The weak axiom of revealed preference (WARP).

Class 3: Implications of WARP. The compensated law of demand. Substitution effects. Differentiable version of the compensated law of demand: the negative semidefiniteness of the Slutsky matrix and the Slutsky equation. Is the Slutsky matrix symmetric? The singularity of the Slutsky matrix. WARP and preference maximization.

Class 4: Classical preference-based demand theory. The preference relation and its properties. Completeness, transitivity, desirability and convexity properties.

Class 5: Utility representation of preferences. Continuous preference relations and representability.

Class 6: The utility maximization problem and its solution. Walrasian or ordinary demand correspondence. Properties of the demand correspondence. The indirect utility function.

Class 7: Properties of the indirect utility function. The expenditure minimization problem and its solution. The expenditure function. Properties of the expenditure function.

Class 8: Relationship between the expenditure and the indirect utility functions. The Hicksian or compensated demand correspondence. Properties of the compensated demand. Hicksian demand and the compensated law of demand. The Slutsky matrix when derived from preference maximization. Substitution effects revisited. The negative semidefiniteness, symmetry and singularity of the Slutsky substitution matrix. Relation between Walrasian demand and the indirect utility function: Roy's identity.

Class 9: Integrability. Recovering the expenditure function from demand. Recovering preferences from the expenditure function. The strong axiom of revealed preference (SARP).

Midterm exam: Wednesday October 10, 1:00 p.m. - 2:30 p.m.

Class 10: Aggregate demand. Aggregate demand as a function of aggregate wealth. Linear wealth expansion paths and Gorman forms. WARP in the aggregate. Price independence of wealth levels and the uncompensated law of demand. The representative consumer assumption.

Class 11: Producer theory. Production sets and their properties. The profit maximization problem. The supply correspondence and the profit function. The single output case: production function and conditions for profit maximization.

Class 12: Properties of supply and profit functions (homogeneity, convexity, Hotelling's lemma). The positive semidefiniteness of the matrix of price effects as an expression of the law of supply. Symmetry and singularity of the matrix of price effects. The cost minimization problem. Conditional input demands, the cost function and its properties (homogeneity, concavity, Shephard's lemma). Aggregation in the theory of the producer.

Class 13: A brief partial equilibrium introduction to general equilibrium. Quasilinear preferences and small wealth effects. Competitive allocations in a partial equilibrium model: existence, uniqueness, welfare properties (Marshallian consumers' and producers' surplus). General Equilibrium: Basic Definitions. Exchange and production Economies. Pareto efficiency. The Walrasian or competitive equilibrium. The core.

Class 14: The first welfare theorem. Price equilibrium with transfers. The importance of local non-satiation for the first welfare theorem. The strong version of the first welfare theorem: the market and the "jungle."

Class 15: The second welfare theorem. Price quasiequilibrium with transfers. The importance of convexity to establish that any Pareto efficient allocation can be supported by a price quasiequilibrium with transfers. Positive wealth and the relationship between price quasi-equilibria and price equilibria. The core convergence theorem.

Class 16: Existence of Equilibrium. The equilibrium as the zero of a system of equations. Properties of the aggregate excess demand. A graphic existence proof based on the intermediate value theorem. The equilibrium as a fixed point. Proof of existence based on Brouwer's fixed point theorem.

Class 17: Local uniqueness of equilibrium. Regular economies. The local uniqueness, finiteness and oddness of equilibria in regular economies. Genericity of regular economies. How arbitrary is aggregate excess demand? The Sonnenschein-Mantel-Debreu theorem. Implications of the theorem for uniqueness, comparative statics and stability of equilibrium.

Class 18: Uniqueness of equilibrium. WARP in the aggregate. Why WARP in the aggregate is now an even stronger condition (wealth distribution as a function of prices). The gross substitutes property. Comparative statics and stability of equilibrium.

Class 19: Elements of decision making under uncertainty: expected utility and risk aversion. General equilibrium under uncertainty. States of the world and state contingent commodities. Arrow-Debreu equilibrium.

Class 20: Sequential trade. The ex ante and ex post efficient allocation of risk in the Arrow-Debreu equilibrium. Arrow securities. Radner equilibrium. Equivalence of Arrow-Debreu equilibria and Radner equilibria under Arrow securities. General assets and market incompleteness.

Class 21: Social choice. Bergson-Samuelson social welfare functions. Independence of irrelevant alternatives and Arrow's impossibility theorem.

Class 22: Arrow social welfare functions. Neutrality-independence-monotonicity and a second version of Arrow's theorem.

Class 23: Mechanism design. Implementation in dominant strategies. The dominant strategies revelation principle. The Gibbard-Satterthwaite impossibility theorem.

Class 24: Implementation in Nash equilibrium. Monotonicity. Maskin's theorem.

Final exam: Friday December ??, 2:00 p.m. - 5:00 p.m.