

Microeconomic Theory I: A Notebook

With Jonathan Libgober

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Check my [Github Page](#), or [email me](#)!

August 28, 2021

HERE WE GO!

This is my learning notebook of Microeconomic Theory I (Course number: ECON601 at USC Economics). As one of the core courses in an economic Ph.D. curriculum, Microeconomic Theory I is beyond important to my research. Therefore, I would love to use this notebook as a commitment mechanism, to document lecture notes, discuss session and office hour intuitions, reading summaries, my personal questions regarding the topics and more. By building a file from scratch, hopefull I could have a more systematic and sophisticated understanding on the content of this course.

I thank Prof. Jonathan Libgober at USC Economics for leading the discussion of the course and providing intuitive ways to understand microeconomic theory. Please check his webpage [here](#), he is such fun.

I also appreciate the time and effort my TA Qitong Wang put into this course, guiding me through discussing sessions and problem sets. When I have questions, he is always there to help.

Following the structure of the course, this notebook will cover three aspects of microeconomic theories: (a) individual decision making, (b) game theory, (c) mechanism design and contract theory. Apart from Jonathan's lecture notes, I will also summarize the reading materials, including: [Mas-Colell et al. \(1995\)](#)'s *Microeconomic Theory*, [Mailath \(2018\)](#)'s *Modelling Strategic Behavior*¹, [Fudenberg and Tirole \(1991\)](#)'s *Game Theory*, [Myerson \(1991\)](#)'s *Game Theory: Analysis of Conflicts*, [Bolton and Dewatripont \(2005\)](#)'s *Contract Theory*, [Mailath and Samuelson \(2006\)](#)'s *Repeated Games and Reputation* and [Osborne and Rubinstein \(1994\)](#)'s *A Course in Game Theory*. Other materials will also be referred to along the way.

Building this notebook is truly a memorable journey for me. I would love to share this review and all the related materials to anyone that finds them useful. And unavoidably, I would make some typos and other minor mistakes (hopefully not big ones). So I'd really appreciate any correction. If you find any mistakes, please send the mistakes to this email address saizhang.econ@gmail.com, BIG thanks in advance!

¹Latest version (May 2021) available [here](#).

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Part I

Individual Decision Making

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UTILITIES, PREFERENCES AND CHOICES

CHAPTER 2

FUNDAMENTALS OF CONSUMER THEORY

CHAPTER 3

LAGRANGE MAXIMIZATION AND DUALITY

CHAPTER 4

MONOTONE COMPARATIVE STATICS

CHAPTER 5

EXPECTED UTILITY AND DECISIONMAKING UNDER UNCERTAINTY

CHAPTER 6

AGGREGATION AND THE EXISTENCE OF A REPRESENTATIVE CONSUMER

CHAPTER 7

PRODUCER THEORY

CHAPTER 8

STOCHASTIC CHOICE

Part II

Game Theory

CHAPTER 9

NASH EQUILIBRIUM AND BAYESIAN NASH EQUILIBRIUM

CHAPTER 10

RATIONALIZABILITY AND DOMINANT STRATEGIES

CHAPTER 11

CORRELATED EQUILIBRIUM

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DYNAMIC GAMES AND REFINEMENTS

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REPEATED GAMES/FOLK THEOREM

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RECURSIVE METHODS IN REPEATED GAMES

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Mechanism Design and Contract Theory

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ARROW'S THEOREM AND SOCIAL CHOICE

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BOUNDARIES OF THE FIRM AND COASE'S THEOREM

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IMPLEMENTATION CONCEPTS

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THE REVELATION PRINCIPLE

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AUCTIONS AND OPTIMAL AUCTIONS

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EFFICIENT IMPLEMENTATION

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MORAL HAZARD

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FULL IMPLEMENTATION

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