

# ADVANCED MICROECONOMIC THEORY

An Intuitive Approach with Examples

Felix Muñoz-García

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This textbook offers an introduction to advanced microeconomic theory that emphasizes the intuition behind mathematical assumptions, providing step-by-step examples that show how to apply theoretical models. It covers standard topics such as preference relations, demand theory and applications, producer theory, choice under uncertainty, partial and general equilibrium, monopoly, game theory and imperfect competition, externalities and public goods, and contract theory; but its intuitive and application-oriented approach provides students with a bridge to more technical topics. The book can be used by advanced undergraduates as well as master's students in economics, finance, and public policy, and by PhD students in programs with an applied focus.

The text connects each topic with recent findings in behavioral and experimental economics and discusses these results in context within the appropriate chapter. Step-by-step examples appear immediately after the main theoretical findings, and end-of-chapter exercises help students understand how to approach similar exercises on their own. An appendix reviews basic mathematical concepts. A separate workbook, *Practice Exercises for Advanced Microeconomic Theory*, offers solutions to selected problems with detailed explanations. The textbook and workbook together help students improve both their theoretical and practical preparation in advanced microeconomics.

**Felix Muñoz-Garcia** is Associate Professor in the School of Economic Sciences at Washington State University.

*"Advanced Microeconomic Theory covers the core microeconomics curriculum with a perfect balance between intuition and rigor. The book is also notable for incorporating insights from behavioral economics. It is an excellent text for advanced undergraduates, master's, and PhD students of economics."*

—**John Duffy, Professor, Department of Economics, University of California, Irvine**

*"Those looking for an advanced microeconomics textbook will find that Felix Muñoz-Garcia excels at combining conceptual clarity, mathematical rigor, relevant examples, and intuition. This book is definitely the best option."*

—**Georges Zaccour, Chair in Game Theory and Management, HEC Montréal**

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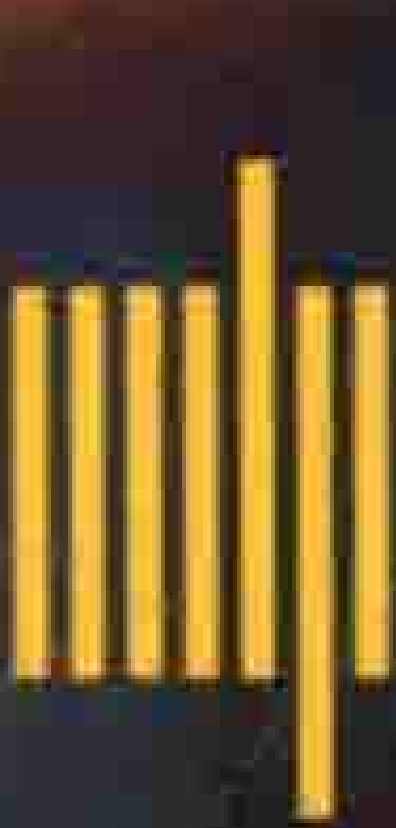
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*An Intuitive Approach with Examples*



# Advanced Microeconomic Theory

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Felix Muñoz-Garcia

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## Advanced Microeconomic Theory



## Preface

This textbook offers a friendly introduction to advanced microeconomic theory that undergraduate and graduate students can use to transition into more technical topics. Every chapter explicitly connects the materials of Intermediate microeconomics courses with the topics taught in most Master's programs (and some PhD courses) during the first semester: preference relations, demand theory and applications, producer theory, and choice under uncertainty; and some of the topics studied during the second semester: partial and general equilibrium, monopoly, oligopoly models, externalities and public goods, and contract theory.

The presentation differs from current graduate-level textbooks—essentially, Mas-Colell et al. (1995), Jehle and Reny (2011), and Varian (1992)—along several dimensions: (1) it emphasizes the economic intuition behind mathematical properties and assumptions, (2) it provides several step-by-step examples in every chapter in order to help students to apply theoretical results using specific functional forms, and (3) it includes several sections discussing topics on behavioral economics. Therefore, while the presentation includes advanced materials covered in Master's and PhD programs, the economic interpretations and examples make the exposition easy to understand for upper-level undergraduate students as well. This textbook should therefore be especially attractive for students in Master's programs—in disciplines such as Economics, Finance, and Public Policy—as well as for PhD students in programs with a strong applied focus. Unfortunately, current graduate-level textbooks provide limited intuition and applications, leaving many students with the impression that their first year of graduate school is disconnected from the topics they learned as undergraduates, ultimately discouraging students from finishing their graduate studies. In contrast, this textbook seeks to provide a more explicit bridge to graduate-level microeconomic theory, thus preparing students to easily apply theory to their future research interests.



The textbook is accompanied by a *Workbook for Advanced Microeconomic Theory*, which includes a complete set of exercises for every chapter with detailed answer keys (106 exercises in total). In particular, the *Workbook* offers step-by-step explanations so that students can better understand how to approach similar exercises on their own, and emphasizes the economic intuition behind mathematical results. As a consequence the *Workbook* is radically different from solution manuals currently in the market, which rarely provide detailed explanations, are difficult to read on their own, and are only distributed to instructors. The combination of textbook and workbook is hence the only combination of its kind in the market, and together, they seek to help graduate students improve both their theoretical and practical preparation in advanced microeconomics.

### Organization of the Book

The first two chapters are dedicated to consumer theory, first describing preference relations and utility functions (chapter 1), and then presenting demand theory (chapter 2). Chapter 3 provides a more applied perspective by using the tools learned in previous chapters to evaluate the welfare change that results from a price change, and the setting of different types of taxes. Chapters 4 and 5 study topics on choice under uncertainty and production theory, respectively, and chapter 6 analyzes partial and general equilibrium. The last four chapters examine equilibrium behavior under market imperfections, namely monopoly (chapter 7), imperfect competition (chapter 8), externalities and public goods (chapter 9), and contract theory (chapter 10), and these last chapters discuss how regulation can induce private agents to voluntarily produce socially optimal outcomes. Every chapter includes several parametric examples that apply the main theoretical results to specific functional forms, and further reading recommendations are noted throughout each chapter.

### How to Use This Textbook

The writing style of the textbook, and the possibility of combining it with the *Workbook*, allows for flexible uses by instructors:

***Upper-undergraduate and Master's programs*** Instructors in these courses can assign chapters of the textbook as required readings, since they are self-contained and their explanations should be easily accessible. Additionally instructors could assign the reading of specific exercises in the *Workbook*, which should help students better

understand the application of theoretical foundations, ultimately helping them to become better prepared for homework assignments and exams.

***PhD level—applied approach*** Instructors can assign this textbook as the main reading reference, complementing it with journal articles, and the reading of certain exercises of the *Workbook*. As mentioned above, this strategy could be particularly effective to ensure that students can more easily link theoretical topics with applications.

***PhD level—theoretical approach*** Instructors preferring a more theoretical focus can recommend chapters as an introduction to the more advanced topics covered in class. This strategy can prove especially useful, as it could allow instructors to dedicate more time to discussing theoretical foundations in class, such as detailed proofs and recent journal articles. Instructors could also assign the reading of a list of exercises from the *Workbook*, in order to facilitate the comprehension of the main theoretical results and its application to specific settings.

### Examples of Course Guidelines

***Master's programs in Economics*** Schools offering two semesters in microeconomic theory could cover chapters 1 through 5 in the first semester, and chapters 6 through 10 in the second semester. Schools only offering one-semester course could cover chapters 1 through 6 if their focus is on consumer and producer theory, or chapters 1, 2, 5, and 7 through 10 if their focus is on market imperfections and contract theory.

***Master's programs in Finance*** If the program only offers a one-semester course in microeconomic theory, a natural list of tentative chapters (with a focus on optimal decision making, uncertainty, strategy, and contracts) would be chapters 1, 2, 5, 7, 8, and 10.

***Master's programs in Public Policy*** If the program only offers a one-semester course in microeconomic theory, a natural list of tentative chapters (with a focus on consumer and producer theory, market imperfections, and public policies addressing these market imperfections) would be chapters 1, 2, 3, and 7-10

***PhD programs in Economics or Finance*** Most programs require two semesters in microeconomic theory, and often focus on consumer and producer theory during the first semester (chapters 1 through 6, thus including partial and general equilibrium); and analyze game theory, market imperfections and contract theory during the second semester (chapters 7 through 10).

**Undergraduate courses** Courses such as a one-semester “Topics in Microeconomics” for seniors might include a subset of chapters from the textbook (about five chapters or less), depending on the topics that instructors plan to emphasize in the course:

- Focus on consumer theory and uncertainty (chapters 1–5)
- Focus on consumer and producer theory, including general equilibrium (chapters 1–4, 6)
- Focus on uncertainty, monopoly, game theory, imperfect competition, externalities and public goods (chapters 5, 7–9)
- Focus on optimal decision making, uncertainty, strategy and contracts (chapters 1, 2, 5, 8, 10)
- Focus on strategy, market imperfections and regulation (chapters 7–10)

### Ancillary Materials

**Workbook for Advanced Microeconomic Theory** The accompanying *Workbook* includes step-by-step answer keys with intuitive explanations to all odd-numbered end-of-chapter exercises (106 exercises). These exercises and their answer keys are intended to facilitate students’ preparation for their own homework assignments and exams (at both the Master’s and PhD levels) and to help students strengthen the core topics before transitioning into more challenging materials (at the PhD level). A set of exercises could be assigned as a required reading for every chapter during the semester, since they could effectively support students’ learning.

**Solutions Manual for Advanced Microeconomic Theory** The accompanying *Solutions Manual* provides detailed answer keys to all chapter exercises (215 exercises in total). The *Solutions Manual* is only available to instructors.

**PowerPoint slides** The accompanying PowerPoint slides cover the main topics in every chapter of the current textbook. They can be used by instructors, edited in order to elaborate on specific topics, and distributed to students as a first set of lecture notes they can complement with in-class explanations.

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