中级微观经济学精要

英文版

[美] 罗伯托·塞拉诺（Roberto Serrano）
艾伦·M. 费尔德曼（Allan M. Feldman） 著

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A SHORT COURSE IN INTERMEDIATE MICROECONOMICS WITH CALCULUS

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A Short Course in Intermediate Microeconomics with Calculus

This book provides a concise treatment of the core concepts of microeconomic theory at the intermediate level with calculus integrated into the text. The authors, Roberto Serrano and Allan M. Feldman, start with consumer theory and then discuss preferences and utility, budget constraints, the consumer's optimal choice, demand, and the consumer's choices about labor and savings. They next turn to welfare economics: When is one policy better for society than another? Following are chapters presenting the theory of the firm and profit maximization in several alternative models. Next they discuss partial equilibrium models of competitive markets, monopoly markets, and duopoly markets. The authors then provide general equilibrium models of exchange and production, and they analyze market failures created by externalities, public goods, and asymmetric information. They also offer introductory treatments of decision theory under uncertainty and of game theory. Graphic analysis is presented when necessary, but distractions are avoided.

Roberto Serrano is Harrison S. Kravis University Professor at Brown University, Rhode Island. He has contributed to different areas in microeconomic theory and game theory, and his research has been published in top journals, including *Econometrica*, the *Journal of Political Economy*, the *Review of Economic Studies*, the *Journal of Economic Theory, Games and Economic Behavior, SIAM Review*, and *Mathematics of Operations Research*. He has received prestigious fellowships and prizes, including the Alfred P. Sloan Foundation Fellowship in 1988 and the Fundación Banco Herrero Prize in 2004, awarded to the best Spanish economist under 40, as well as teaching prizes at Brown. He is managing editor of *Economics Letters* and the associate editor of the *International Journal of Game Theory and Mathematical Social Sciences*. He was director of graduate studies in economics at Brown from 2006 to 2010 and has served as Economics Department chair since 2010.

Allan M. Feldman is Professor Emeritus of Economics at Brown University. His research has appeared in the *Review of Economic Studies, Econometrica, American Economic Review, Public Choice*, the *Journal of Economic Theory, American Law and Economics Review*, and other journals. He is coauthor (with Roberto Serrano) of *Welfare Economics and Social Choice Theory*. Professor Feldman taught economics at Brown University for thirty-eight years, including the Intermediate Microeconomics course. He was director of undergraduate studies in the Economics Department at Brown for many years.

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简　介

本书在中级层次上，以微积分为工具，简明介绍了微观经济学核心概念。罗伯托·塞拉诺(Roberto Serrano)与艾伦·M.费尔德曼(Allan M. Feldman)首先介绍了消费者理论，讨论了偏好和效用、预算约束、消费者的最优选择、需求以及消费者的劳动供给决策与储蓄决策；接着介绍了福利经济学：从社会角度看，在什么时候，一项政策比另一项政策更好；然后介绍了企业和企业利润最大化理论，讨论了竞争市场、垄断市场和双寡头市场等局部均衡模型；接着介绍了交换与生产的一般均衡模型，分析了由外部性、公共品和不对称信息导致的市场失灵。他们还简单介绍了不确定性条件下的决策理论和博弈论。本书仅在必要时才辅以图形分析，同时，尽量避免不必要的展开。

罗伯托·塞拉诺是美国布朗大学教授，他的研究遍及微观经济理论和博弈论的各个领域，成果发表在包括 *Econometrica*，*Journal of Political Economy*，*Review of Economic Studies*，*Journal of Economic Theory*，*Games and Economic Behavior*，*SIAM Review*，*Mathematics of Operations Research* 等顶级学术期刊上。他于1988年获得阿尔弗雷德·P.斯隆(Alfred P. Sloan)基金学者称号，于2004年获得范德逊·班柯·赫雷罗(Fundacion Banco Herrero)奖——授予40岁以下最杰出西班牙经济学家的奖项；他在布朗大学获得过一些教学奖。他担任一些学术刊物主编。从2006年到2010年，他担任布朗大学经济学系研究生部主任；自2010年起，他任经济学系系主任。

艾伦·M.费尔德曼是布朗大学经济学荣誉教授，他的研究成果发表在 *Review of Economic Studies*，*Econometrica*，*American Economic Review*，*Public Choice*，*Journal of Economic Theory*，*American Law and Economic Review* 等学术刊物上。他和罗伯托·塞拉诺合著了《福利经济学与社会选择理论》(*Welfare Economics and Social Choice Theory*)。费尔德曼教授在布朗大学讲授了38年的经济学课程，其中就有中级微观经济学。他曾任布朗大学经济学系本科生教学主任。

本书中文版也由上海财经大学出版社翻译出版，欢迎参阅。

Preface

Welcome to this intermediate microeconomics course. At this point, you should already have taken an introductory economics class that exposed you to the method and main ideas of the two parts of economic theory, microeconomics and macroeconomics. In addition, you should have taken a calculus course. The reason is simple: calculus is basic to microeconomics, much of which is about *maximizing* something (for instance, utility, or profit), or about *minimizing* something else (for instance, costs). Calculus is the area of mathematics most suited to maximization and minimization problems; using it makes microeconomic theory straightforward, transparent, and precise.

Microeconomics begins with the study of how economic agents in the private sector (*consumers* and *firms*) make their decisions. We start this course with a brief introduction, in Chapter 1. Then we turn to the main events: Part I of our course (Chapters 2 through 7) is about the theory of the consumer, and Part II (Chapters 8 through 10) is about the theory of the producer – that is, the firm. Part I provides a foundation for the demand curves that you saw in your principles course, and Part II provides a foundation for the supply curves that you saw.

Most economic decisions are made in the private sector, but governments also make many important economic decisions. We touch on these throughout the course, particularly when we discuss taxes, monopolies, externalities, and public goods. Our main focus, though, is the private sector, because in market economies the private sector is, and should be, the main protagonist.

Next, Part III (Chapters 11 through 13) combines theories of the consumer and the producer into the study of individual markets. Here, our focus is on different types of market structure, depending on the market power of the firms producing the goods. Market power is related to the number of firms in the market. We begin, in Chapter 11, with the case of *perfect competition*, in which each firm is powerless to affect the price of the good it sells; this is usually a consequence of there being many firms selling the same good. In Chapter 12, we analyze the polar opposite

case, called *monopoly*, in which only one firm provides the good. We also consider intermediate cases between these extremes: in Chapter 13 we analyze *duopoly*, in which two firms compete in the market. One important point that we emphasize is the strong connection between competition and the welfare of a society. This is the connection that was first discussed by Adam Smith, who wrote in 1776 that the invisible hand of market competition leads self-interested buyers and sellers to an outcome that is beneficial to society as a whole.

Our analysis in Part III is called *partial equilibrium* analysis because it focuses on *one* market in isolation. In Part IV (Chapters 15 and 16), we develop models that look at *all* markets simultaneously; this is called *general equilibrium* analysis. The general equilibrium approach is useful to understand the implications of interactions among the different markets. These interactions are, of course, essential in the economy. A main theme in Part IV is the generalization of the invisible hand idea that market competition leads to the social good. We shall see that under certain conditions there are strong connections between competition in markets and the efficient allocation of resources. These connections, or *fundamental theorems of welfare economics*, as economists call them, are important both to people interested in economic ideas and to people simply interested in what kind of economic world they want to inhabit.

Finally, Part V (Chapters 17, 18, and 20) focuses on the circumstances under which even competitive markets, left by themselves, fail to allocate resources efficiently. This is a very important area of study, because these market failures are common; when they occur, governments, policy makers, and informed citizens must consider what policy interventions would best improve the performance of the unregulated market.

Our course includes two chapters that are not really part of the building-blocks flow from consumer theory through market failure. Chapter 14 is a basic introduction to game theory. The use of game theory is so prevalent in economics today that we think it is important to provide a treatment here, even if the theories of the consumer, the firm, competitive markets, and market failure could get along without it. A similar comment applies to Chapter 19, on uncertainty and expected utility. Although most of this course describes decision problems and markets under complete information, the presence of uncertainty is crucial in much of economic life, and much modern microeconomic analysis centers around it. Some instructors may choose to ignore these chapters in their intermediate microeconomics courses, but others may want to cover them. To free up some time to do that, we offer some suggestions:

We include two alternative treatments of the theory of the firm in this book. The first is contained in Chapter 8, the single-input model of the firm, which abstracts from the cost minimization problem. The second is contained in Chapters 9 and 10, the multiple-input model of the firm, which includes the cost minimization problem. Chapter 8 can be viewed as a quick route, a "highway" to the supply

curve. An instructor looking for time to teach some of the newer topics covered in Chapter 14 or Chapter 19 might cover Chapter 8 and omit Chapters 9 and 10. Another shortcut in the theory of firm section would be to omit Chapter 10, on the short-run, multiple-input model. Furthermore, our chapters on market failure generally contain basic theory in their first sections and applications in later sections. Instructors might choose to include or omit some of the theory or some of the applications, depending on time and interests.

This book has grown out of the lecture notes that Roberto Serrano developed to teach the Intermediate Microeconomics course at Brown University. The notes were shared with other instructors at Brown over the years. One of these instructors, Amy Serrano (Roberto's wife), first had the idea of turning them into a book: "This looks like a good skeleton of something; perhaps flesh can be put around these bones." Following this suggestion, Roberto and Allan began work on the book project.

We are grateful to all our Intermediate Microeconomics students who helped us develop and present this material. Martin Besfamille, Dror Brenner, Pedro Dal Bó, EeCheng Ong, and Amy Serrano were kind enough to try out preliminary versions of the manuscript in their sections of the course at Brown. We thank them and their students for all the helpful comments that they provided. Amy also provided numerous comments that improved the exposition throughout, and her input was especially important in Chapter 7. EeCheng provided superb assistance completing the exercises and their solutions, as well as doing a comprehensive proofreading and editing. Elise Fishelson gave us detailed comments on each chapter at a preliminary stage; Omer Ozak helped with some graphs and TEX issues; and Rachel Bell helped with some graphs. Barbara Feldman (Allan's wife) was patient and encouraging. We thank the anonymous reviewers selected by Cambridge University Press for their helpful feedback, Scott Parris and Chris Harrison, our editors at Cambridge, for their encouragement and support of the project, and Deborah Wenger, our copy editor.

前　言

欢迎学习中级微观经济学。你应该已学过经济学原理，了解经济学理论两个构成部分——微观经济学和宏观经济学——的主要方法和思想。你应该已学过微积分。微积分是微观经济学的基本分析工具，因为微观经济学中的很多内容涉及最大化(例如，效用或利润最大化)或最小化(例如，成本最小化)。微积分最适合分析最大化和最小化问题；借助微积分，微观经济学理论分析更直接、清晰和精确。

微观经济学研究私人部门的经济主体(消费者和企业)如何做决策。第一章是引论。接下来的两部分是微观经济学的主要内容：第一部分(第二章到第七章)介绍消费者理论。第二部分(第八章到第十章)介绍生产者理论即企业理论。第一部分为经济学原理中讲到的需求曲线提供基础，第二部分为供给曲线提供基础。

经济中的大部分决策由私人部门做出，但政府也做出许多重要经济决策。在本书中，在讨论税收、垄断、外部性和公共品时，我们将谈到政府决策。但是，我们的重心放在私人部门上。因为在市场经济中，私人部门是主角，并且，也应该是主角。

第三部分(第十一章到第十三章)将消费者理论和生产者理论结合在一起，研究市场。在这里，我们依据商品生产企业的市场力量划分各种类型的市场结构。市场力量与市场中企业的数量有关。第十一章探讨完全竞争的市场结构。在这种结构中，任何企业都没有力量影响它所出售的商品的价格，因为有许多企业在出售同一种商品。第十二章分析处于另一个极端的市场结构，我们称其为垄断。在这一市场结构中，只有一家企业提供商品。然后我们探讨介于这两种市场结构之间的结构，即第十三章中的寡头垄断市场结构。在这种结构中，两个企业在市场上相竞争。我们强调竞争与社会福利之间的关系。亚当·斯密最先研究了这种关系，他在1776年出版的《国富论》一书中指出，市场竞争这只看不见的手导致追求自身利益的买方和卖方实现了有益于整个社会的结果。

第三部分中的内容被称为局部均衡分析，因为它孤立地研究一个市场。第

四部分(第十五章和第十六章)中的模型,则同时研究所有市场,因此被称为一般均衡分析。一般均衡分析,对理解各个市场之间的相互作用十分有用。各个市场之间的相互作用是经济的基本关系。第四部分的主要任务是把市场竞争导致社会最优状态的看不见的手理论推而广之。我们将看到,在某些条件下,在市场竞争与有效率的资源配置之间存在着强有力的联系。这些联系,即经济学家所说的福利经济学基本定理,对着迷于经济学理论的人和那些只想了解我们所生活的经济世界的人,都十分重要。

第五部分(第十七章、第十八章和第二十章)探讨了在什么条件下,甚至竞争的市场,都无法有效率地配置资源。这是个十分重要的研究领域,因为市场失灵现象十分普遍;在出现市场失灵时,政府、政策制定者和拥有信息的公民,必须考虑什么样的政策干预能最好地让不受规制的市场起作用。

本书中有两章内容不是从消费者理论到市场失灵理论的有机构成部分。第十四章介绍了博弈论的基础知识。今天,博弈论在经济学中被广泛应用,我们认为需要介绍这方面的知识,虽然没有第十四章,我们依然能介绍消费者、企业、竞争市场和市场失灵等理论。这一点也适用于第十九章,它介绍了不确定性和期望效用理论的基础知识。本书主要在完全信息条件下探讨决策问题和市场,但是,不确定性存在于很多经济现象中,并且,很多现代微观经济学理论围绕着不确定性展开。一些教师可能想在其课程中跳过这两章,但也有些教师想讲授这些内容。因此,为了能够腾出课时讲授这两章内容,我们建议如下处理方法:

在本书中,对企业理论,你有两种讲授方式。第八章介绍了只使用一种投入品的企业模型,没有涉及成本最小化问题。第九章和第十章介绍了使用多种投入品的企业模型,谈到了成本最小化问题。你可以把第八章看作是到达供给曲线的捷径。如果想讲授第十四章或第十九章中的一些内容,你可以只讲第八章而跳过第九章和第十章。讲授企业理论部分的另一捷径是跳过第十章中的短期多投入品模型。并且,在关于市场失灵的每一章中,前面几节一般介绍基本理论,后面几节介绍应用。教师可以根据时间和兴趣,选择或跳过其中的一些理论和应用。

本书源自罗伯托·塞拉诺在布朗大学讲授中级微观经济学课程时撰写的一些讲义。过去一些年里,布朗大学一些教师在讲授这门课程时也使用这些讲义。其中一位教师,艾米·塞拉诺(Amy Serrano,罗伯托·塞拉诺的妻子),建议把这些讲义变为一本书:"它已经具有了书的骨架;也许只需围绕着这个骨架增添一些内容。"按照这一建议,罗伯托与艾伦启动了本书的撰写工作。

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我们感谢布朗大学修读过中级微观经济学课程的学生,他们帮助我们形成了本书的内容,为我们讲授本书的内容提供了机会。马丁·拜斯法米利(Martin Besfamille)、德罗尔·勃伦娜(Dror Brenner)、佩德罗·达尔·勃(Pedro Dal Bo)、伊陈·昂(EeCheng Ong)和艾米·塞拉诺在布朗大学中级微观经济学课程中使用过本书各个版本的手稿。艾米提供了很多建议,建议提升了本书的清晰程度,对第七章中的表述尤其有价值。伊陈帮助完成了本书的习题和习题答案,完成了全书的校对和编辑工作。伊莉斯·费舍尔松(Elise Fishelson)对早期手稿中的每一章都提出了详细的修改建议;欧麦·奥扎克(Omer Ozak)帮助解决了一些图形和 TEX 问题;雷切尔·贝尔(Rachel Bell)在一些图形上提供了帮助。我们感谢芭芭拉·费尔德曼(Barbara Feldman,艾伦·费尔德曼的妻子)在撰写本书过程中对我们的鼓励。我们感谢剑桥大学出版社聘请的匿名审稿人,他们提供了有价值的建议。我们感谢剑桥大学出版社的编辑斯科特·帕里斯(Scott Parris)与克里斯·哈里森(Chris Harrison),感谢他们的鼓励和支持;我们感谢本书编辑德勃拉·温格(Deborah Wenger)。

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