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世纪高教·经济学英文版教材

Markets, Games, & Strategic Behavior

市场、博弈和策略行为

[美] 查尔斯·A. 霍尔特
Charles A. Holt
著

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图书在版编目(CIP)数据

市场、博弈和策略行为＝Markets，Games，& Strategic Behavior：英文/(美)霍尔特(Holt，C. A.)著. —影印本. —上海：格致出版社，2010

ISBN 978-7-5432-1892-5

Ⅰ. ①市… Ⅱ. ①霍… Ⅲ. ①微观经济学-研究-英文 Ⅳ. ①F016

中国版本图书馆 CIP 数据核字(2010)第 254611 号

责任编辑　李　娜

封面设计　人马艺术设计·储平

市场、博弈和策略行为

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出　版　世纪出版集团 www. ewen. cc

格致出版社 www. hibooks. cn

上海人民出版社

(200001　上海福建中路193号24层)

编辑部热线 021-63914988

市场部热线 021-63914081

发　行　世纪出版集团发行中心

印　刷　浙江省临安市曙光印务有限公司

开　本　787×1092 毫米　1/16

印　张　36

插　页　2

字　数　670,000

版　次　2011 年 3 月第 1 版

印　次　2011 年 3 月第 1 次印刷

ISBN 978-7-5432-1892-5/F·377

定　价　59.00 元

前　言

经济学正经历着一股热衷于行为思考的复古浪潮。当理性和预见都有限时，当心理学和社会学的因素也起着某种作用时，我们需要研究人们如何决策。于是，越来越多的人利用经济学实验来研究市场、博弈和其他策略情境下的行为。这股愈来愈甚的实验热情同样也反映在了2002年的诺贝尔经济学奖中，该年的诺贝尔经济学奖被同时授予了一位实验经济学家以及另一位实验心理学家。一系列新的相关子学科如雨后春笋般迅速发展起来，包括行为博弈论、行为法和经济学、行为金融和脑神经经济学。实验室实验和现场实验为这些领域的发展提供了关键的实证研究保证。

本书旨在将行为学的方法与课堂学习、练习相融合。每章都从一个实验开始，介绍其中涉及的经济学概念和主要的实验结果。教室中的博弈设计了一个简单的经济学情景，比如市场或者拍卖，强调了几个有关的经济学概念。每章还提供了一段简短的阅读材料，供有需要的教师使用。阅读材料可以作为辅助资料，或者和由学生完成的课堂实验一起布置给学生。在布置阅读之前完成实验，能提高实验的教学价值。很多实验都可以通过掷骰子或者玩扑克牌分工完成。较大规模的课堂可以将学生分成3到6个人一组，一起实施实验并且报告结果。这种小组决策在MBA教学中很常用，小组讨论能够让学生明白某种策略的内涵并且相互学习。这一课堂实验部分包括20个手工完成的实验的说明，以供课堂使用。

对于需要使用计算机的实验，本书提供了配套网站 http://www.aw-bc.com/holt。

许多学院和大学都有无线网络接入端口，因此少数“小组联络员”可以将笔记本电脑带到课堂上来，每个小组可以有一个这样的“小组联络员”。即使在机房中，也可以每2到3名同学作为一组使用一台计算机，这样有助于大家一起学习和讨论。这样的讨论对于非交互的个体决策（比如说，在两个赌局中进行选择）来说就没有那么重要。在这种情况下，基于网络的Veconlab程序可以在课前供学生使用。对于像最后通牒博弈、性别战和猜测博弈这样的单次博弈可以在课后进行实验，因为学生可以在他们的对手登录网站之前阅读实验说明并且作出决策。

连接到Internet之后，Veconlab程序能够在任何标准浏览器中直接打开

运行，并不需要安装任何软件。在之前提到的 Veconlab 网站上可以找到运行该程序所需要的全部说明。学生参与者拿到的详细实验说明与教师之前在网站上选取的各种参数是自动匹配的。基于网络的实验可以很快实施，教师屏幕可以提供诸如决策历史、收益、每轮平均数据等信息，甚至在某些情况下还可以提供理论计算。这些信息可以打印出来或者投影供实验后讨论。在设置选项的扩展菜单下，教师还可以选择每个博弈的具体参数，如买家的数量、卖家的数量、决策轮数、固定支付以及收益等等。比如，在私人价值拍卖的设置菜单中，允许个人选择随机确定的私人价值的范围、竞拍者的数量、竞拍轮数和定价规则(第一价格拍卖还是第二价格拍卖，赢者付钱还是所有人付钱)。我自己也是这样授课，让学生自己设计实验，利用课堂里的其他学生做实验，然后在下一次课中就实验结果进行正式演讲(需要有 PowerPoint)。

本书的开始几章是一些有买方和卖方的市场、简单的两人博弈以及个体抽奖选择决策的例子。这些章节提出了一些方法论的问题，比如，在研究实验的过程中，我们是否或者什么时候需要财务上的激励。此外，还介绍了决策和均衡的重要概念。这些章节的主要目的是介绍基础知识；一些异常情况和其他理论问题在后面的章节中再讨论。在按顺序讲授完这些章节之后，剩余章节在授课顺序上相对自由，分为以下部分：市场、讨价还价、公共选择、拍卖、个体决策、博弈和不对称信息。教师可以基于重点和难度自由选择。

本书可以作为组织实验经济学、行为博弈论以及微观经济学专题教学的工具书。每章都从一个关键的实验开始，每个实验都涉及相关理论并且附有例子。大多数讨论集中在实验室实验，部分章节也介绍了创新的现场实验。每章相对独立，因此可以选择作为特定课程(如公共经济学)的补充材料。本书还可以融入微观经济学、管理经济学或者 MBA 的战略管理课程。非经济学专业的人，比如政治学专业、人类学专业和心理学专业的学生，以及任何对于行为金融、行为法和经济学感兴趣的人或许会对书中的不少实验设计感兴趣。

本书的章节设计使其能够很容易作为辅助读物，给高级水平的课程提供生动的学习以及行为方面的参考。对于中级微观经济学课程来说，推荐以下章节：简介(第 2、3 章)，市场(第 6—10 章)，讨价还价(第 12 章)，公共物品和外部性(第 14、16 章)。公共经济学课程可以介绍以下章节：第 2、3、12 章，公共选择和选举(第 14、16、17、18 章)。博弈论课程可以介绍以下章节：第 1—5 章，古诺市场(第 6 章)，讨价还价(第 12 章)，寻租(第 17 章)，行为博弈论(第 23—26 章)，信号发送(第 33 章)。关于信息和拍卖的课程可以介绍以下章节：第 1—5 章，串谋(第 9 章)，市场失灵和匹配机制(第 10 章)，拍卖(第 19—22 章)，信息(第 30—34 章)。行为金融课程可以介绍以下章节：第 1—3 章，风险

规避(第 4 章),资产市场(第 11 章),彩票选择异常(第 28 章),贝叶斯法则、层叠、信号发送和预测市场(第 30—34 章)。

本书对数学的要求不高,实验主要基于区分不同理论的参数情况。有些实验的数学计算方法已经逐步给出。通过在表格中复制某些单元格进行迭代计算,收敛后可以得到均衡结果。除了关于拍卖和古诺市场的章节,本书尽量避免使用微机分。书中尽量用例子和图来说明实验结果背后的经济意义。

我尽可能让行文看似简单,因此文中并无什么脚注。各章节涉及的参考文献只在章节末的扩展部分中出现。本书并没有包括很多相关的研究与实验综述文献。这些如有需要,可以参考 Kagel 和 Roth(1995)的《实验经济学手册》(*Handbook of Experimental Economics*)与 Hey(1994)的《实验经济学》(*Experimental Economics*),高年级本科生、研究生和该领域的其他研究者有兴趣可以参考这些书籍。关于更多方法论的讨论,请参阅 Friedman 和 Sunder (1994)的《实验方法》(*Experimental Methods*)。对于实验经济学专业的高级课程或研究生课程来说,Davis 和 Holt(1993)的《实验经济学》(*Experimental Economics*)讨论了主流实验,并且给出了相关理论和方法论的概念。鉴于近年来对行为博弈论、现场实验和社会规范的研究方兴未艾,上述这些书中的专题和参考文献并不完全。1995 年以来,已经发表的使用实验室实验方法的经济学文献已经几乎翻倍,而且还有更多的工作论文尚未发表(请参考第 1 章图 1.1)。这些新发表的文献按照关键字索引收录在了实验经济学和社会科学的目录资料中,请参考网址 http://www.people.virginia.edu/~cah2k/y2k.htm。

Charles A. Holt
弗吉尼亚大学

Preface

Economics is enjoying a resurgence of interest in behavioral considerations—in the study of how people actually make decisions when rationality and foresight are not unlimited and when psychological and social considerations may play a role. As a result, economics experiments are increasingly used to study behavior in markets, games, and other strategic situations. The rising excitement about experimental results is reflected in the 2002 Nobel Prize, which was awarded to an experimental economist and an experimental psychologist. Whole new sub-disciplines are arising in the literature, including behavioral game theory, behavioral law and economics, behavioral finance, and neuroeconomics. Laboratory and field experiments provide key empirical guideposts for developments in these areas.

This book is designed to combine a behavioral approach with active classroom learning exercises. Each chapter uses an initial experiment as an organizing device to introduce the economic concepts and main results. The classroom games set up simple economic situations, such as a market or an auction, which highlight several related economic ideas. Each chapter provides a short reading (10–15 pages) for a particular class to use in a one-a-day approach. The reading can serve as a supplement to other material or (preferably) as an assignment in conjunction with an in-class "experiment" in which students play the game. Doing the experiments *before* the assigned reading enhances their teaching value. Many of the games can be run in class "by hand" with dice or playing cards. Large classes can be divided into teams of 3–6 students, which facilitates the collection and announcement of results. Such team decisions are the norm in many M.B.A. programs, since team discussions allow students to clarify strategic insights and learn from each other. The Class Experiments section contains instructions for 20 hand-run games that are adapted for classroom use.

For those with computer access, all games are available on the Companion Website for this book at http://www.aw-bc.com/holt

Many colleges and universities have wireless Internet access, so a handful of "team communicators" can bring laptops to class, and one of these can be assigned to each team. Even in a computer lab it is often most effective to have groups of 2–3 people at each computer, which helps with group learning and discussion. Such discussions are not as important for non-interactive individual decisions (for example, a choice between two gambles). In this case, the Web-based *Ve*conlab programs can be accessed by students

individually before class when it is convenient for them. Running experiments after hours is also easy for games like the ultimatum, battle of sexes, and guessing games that are only played once, since students can read instructions and enter a decision before their partners have logged in.

The *Ve*conlab programs can be set up and run from any standard browser connected to the Internet (Internet Explorer or Mozilla) without loading any software. Full instructions for conducting the programs can be found at the *Ve*conlab site previously mentioned. Student participants receive fully integrated instructions that conform automatically to the features selected by the instructor in the setup process. Web-based games are quicker to administer and the instructor data displays can provide records of decisions, earnings, round-by-round data averages, and in some cases, theoretical calculations. These displays can be printed or projected for post-experiment discussions. There is an extensive menu of setup options for each game that lets the instructor select parameters, such as the numbers of buyers, sellers, decision rounds, fixed payments, and payoffs. For example, the private-value auction setup menu allows one to choose the range of randomly determined private values, the number of bidders and rounds, and the pricing rule (first-price or second-price and "winner-pays" or "all-pay"). I have also taught classes where students design their own experiments and run them using other students in the class, followed by a formal (PowerPoint) presentation of results in the next class.

The first several chapters of this book contain examples of markets with buyers and sellers, simple two-person games, and individual lottery choice decisions. These initial chapters raise a few methodological issues, such as if and when financial incentives are needed for research experiments. In addition, the central notions of decision making and equilibrium are introduced. The focus of these chapters is on the basics; discussion of anomalies and alternative theories is deferred until later. After these chapters are covered, there is a lot of flexibility in terms of the order of coverage of the remaining chapters, which are divided into parts: markets, bargaining, public choice, auctions, individual decisions, games, and asymmetric information. It is possible to pick and choose, based on the level and subject matter of the course.

This book can provide an organizing device for a course in experimental economics, behavioral game theory, and topics in microeconomics. Typically, each chapter is based on a key experiment that is presented with a carefully measured amount of theory and related examples. Much of the discussion pertains to laboratory experiments, but innovative field experiments are included when possible. Chapters are relatively self-contained, making it possible to select specific chapters tailored as a supplement for a particular course, such as public economics. The book can also be integrated into courses in microeconomics, managerial economics, or strategy at the M.B.A. level. Many of the experimental designs may be of interest to non-economists, such as students of political science, anthropology, and psychology, as well as anyone interested in behavioral finance or behavioral law and economics.

The modular nature of the book makes it easy to use as a supplement to add active learning and behavioral elements to upper-level classes. For an intermediate microeco-

nomics course, recommended chapters include the introductory chapters (Chapters 2 and 3); markets (Chapters 6–10); bargaining (Chapter 12); and public goods and externalities (Chapters 14 and 16). For a course in public economics you could use Chapters 2, 3, and 12, and public choice and voting (Chapters 14, 16, 17, and 18). A game theory course could be supplemented with Chapters 1–5 and Cournot markets (Chapter 6); bargaining (Chapter 12); rent seeking (Chapter 17); behavioral game theory (Chapters 23–26); and signaling (Chapter 33). A course with a special focus on information and auctions could cover Chapters 1–5; collusion (Chapter 9); market failure and matching mechanisms (Chapter 10); auctions (Chapters 19–22); and information (Chapters 30–34). A behavioral finance course could include Chapters 1–3 and risk aversion (Chapter 4); asset markets (Chapter 11); lottery choice anomalies (Chapter 28); and Bayes' rule, cascades, signaling, and prediction markets (Chapters 30–34).

Mathematical arguments are simple, since experiments are typically based on parametric cases that distinguish alternative theories. The mathematical calculations are sometimes illustrated with spreadsheet programs that are constructed in a step-by-step process. Then, a process of copying blocks of cells results in iterative calculations that converge to equilibrium solutions. Calculus is generally avoided except in the chapters on auctions and Cournot markets. These optional sections are preceded by discrete examples and graphs that provide the intuition behind more general results.

I have tried to keep the text simple, therefore there are no footnotes. References to other papers are often confined to an Extensions section at the end of the chapter. The book does not contain extensive surveys of related literature on research experiments. Such surveys can be found in Kagel and Roth's (1995) *Handbook of Experimental Economics* and in Hey's (1994) *Experimental Economics*, which are pitched at a level appropriate for advanced undergraduates, graduate students, and researchers in the field. For more discussion of methodology see Friedman and Sunder's (1994) *Experimental Methods*. For an upper-level or graduate course in experimental economics, Davis and Holt's (1993) *Experimental Economics* has the advantage of being organized around the main classes of experiments, with presentations of the associated theory and methodological concepts. The topics and references in all of these books are somewhat incomplete, given the recent heightened interest in behavioral game theory, field experiments, and social norms. Moreover, the number of published economics papers using laboratory methods has approximately doubled since 1995, when the last of these books was published, and there are many more unpublished working papers (see Figure 1.1 in Chapter 1). These new publications are listed and categorized by keyword in the bibliography of experimental economics and social science, available online at http://www.people.virginia.edu/~cah2k/y2k.htm

A friend once asked me to name my intellectual hero, and without hesitation I mentioned Vernon Smith (who was then at the University of Arizona and is currently at George Mason University, or maybe somewhere in Alaska). His work with his colleagues and students has always been a personal inspiration. His 2002 Nobel Prize in Economics (together with Danny Kahneman) is richly deserved, and the effects of his work pervade

many parts of this book. I have been strongly influenced by my thesis advisor and former University of Minnesota colleague, Ed Prescott (Arizona State University), who forced his students to stay focused on using theory to explain observed regularities in the data.

I would especially like to thank my coauthor Lisa Anderson and her College of William and Mary students for many helpful suggestions about this book and the associated software. Much of what I know about these topics is due to joint research projects with Jacob Goeree (California Institute of Technology) and with the following collaborators:

Lisa Anderson, College of William and Mary
Simon Anderson, University of Virginia
Sheryl Ball, Virginia Polytechnic Institute and State University
Jordi Brandts, Consejo Superior de Investigaciones Científicas, Barcelona, Spain
Monica Capra, Emory University
Doug Davis, Virginia Commonwealth University
Catherine Eckel, University of Texas, Dallas
Jean Ensminger, California Institute of Technology
Roland Fryer, Harvard University
Rosario Gomez, Malaga University, Spain
Susan Laury, Georgia State University
Tom Palfrey, California Institute of Technology
David Reiley, University of Arizona
Al Roth, Harvard University
Andy Schotter, New York University
Roger Sherman, University of Houston
Rick Wilson, Rice University

The insurance example in Chapter 21 was suggested by Ann Musser. I also received numerous suggestions from the Addison-Wesley staff—especially the acquisitions editor, Adrienne D'Ambrosio, who has been a strong supporter of this project for several years. Others who have offered comments on earlier versions include the following:

Mark Bykowsky, Federal Communications Commission
Juan Camilo Cardenas, Universidad de los Andes, Colombia
Jeff Carpenter and his undergraduate class, Middlebury College
Gary Charness, University of California, Santa Barbara
James Cox, Georgia State University
Rachel Croson, University of Pennylvania
Nick Feltovich, University of Houston
Dan Friedman, University of California, Santa Cruz
Brit Grosskopf, Texas A&M University
David Grether, California Institute of Technology
Phil Grossman, St. Cloud State University
Shachar Kariv, University of California, Berkeley
Howard Leatherman, University of Maryland
James Murphy, University of Massachusetts, Amerst
Charlie Plott, California Institute of Technology
Tom Rietz, The University of Iowa
Tim Salmon, Florida State University
Betsy Sinclair, California Institute of Technology
Vernon Smith, George Mason University

Annie Talman, an actress who played the role of Michael Douglas's secretary in the film *Wall Street*, suggested the relevance of that film to the material in Chapter 20. While I'm at it, I should thank the wonderful people at various coffee shops where I did a lot of writing—Java Java and Greenberries in Charlottesville, Aromas in Williamsburg, Pete's in Pasadena, and even Amtrak.

Finally, I was fortunate to have an unusually talented and enthusiastic group of Universtiy of Virginia students who read parts of the manuscript: Emily Beck, A. J. Bostian, Jeanna Composti, Kari Elasson, Erin Golub, Katie Johnson, Shelley Johnson, Kurt Mitman, Angela Smith, Mai Pham, Loren Pitt, Uliana Popova, and Stacy Roshan. Any errors should be attributed to my subsequent changes. Joe Monaco and A. J. Bostian set up the Linux servers and procedures for running the programs on a network of hand-held, wireless "pocket" PCs with color, touch-sensitive screens. Imagine a game theory class, outside on the University of Virginia lawn, with students competing in an auction via wireless pocket PCs!

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University of Virgina

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