



3-2013

# Mathematical and Quantitative Methods

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## Recommended Citation

Massey, C. (2013). Mathematical and Quantitative Methods. *Journal of Economic Literature*, 51 (1), 192-193. <http://dx.doi.org/10.1257/jel.51.1.190>

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# Mathematical and Quantitative Methods

## **Disciplines**

Other Mathematics

where, in order to get an analytical solution to a model, the author has to assume away almost every interesting feature of the problem to the point that the remaining model is uninteresting and uninformative. But that at least qualifies the paper for possible publication in *Econometrica*, *REStud*, or *JET*.

Come on, give it a go. The book takes less time than two NFL football games and has more excitement and action.

JAMES R. MARKUSEN  
University of Colorado at Boulder

### C Mathematical and Quantitative Methods

*Schelling's Game Theory: How to Make Decisions*. By Robert V. Dodge. Oxford and New York: Oxford University Press, 2012. Pp. xii, 292. \$39.95. ISBN 978-0-19-985720-3.

JEL 2012-0365

A few years ago, I attended a conference with an unusual format. Speakers presented research papers of other attendees, rather than their own. This worked surprisingly well. It is enlightening to see the points that presenters other than the author emphasize, the ancillary bits a disinterested person appends, and the ease with which a person can “kill one’s darlings” when they are not, in fact, *his* darlings. Is something lost in the translation? Of course. But we are not necessarily worse off. Especially when trying to broaden the work’s appeal.

Something analogous is going on with Robert Dodge’s new book, *Schelling’s Game Theory: How To Make Decisions*. Dodge is a Schelling biographer (*The Strategist*, 2006) who teaches at a private high school in Singapore. He was a student in Schelling’s “Conflict, Cooperation and Strategy” course at the Kennedy School, and later adapted the course for his own students with the goal of bringing Schelling’s methods to a more general audience. This book is an extension of that effort. Schelling assisted by making his course materials available to Dodge, and he happily endorses the book as a “compendium of a course that I taught for graduates and undergraduates at Harvard for thirty years and at the University of Maryland for fifteen.”

Dodge clearly is a practiced presenter of Schelling’s work, and of game theory more generally. His explanations are accessible enough for novices but meaty enough for all but the most advanced readers. The book covers the foundations of game theory—from basic strategic concepts through workhorse, two-player models and eventually to group decisions and outcomes. In most cases, this coverage has a Schellingesque slant, whether due to the contribution of Schelling’s own work or through his illustrations and historical detours. Dodge even includes some practice problems from Schelling’s course, as well as the famous questionnaire from his earliest coordination experiments (which Vince Crawford once suggested marked the beginning of experimental economics).

To bring this kind of source material to a broader audience is a great cause. Dodge enhances that contribution by adding considerably to Schelling’s material. Most surprisingly via extended excerpts from other published works, including Robert Axelrod’s *Evolution of Cooperation*, Dixit and Nalebuff’s *Thinking Strategically*, and Tim Harford’s *The Logic of Life*, as well as articles from Paul Krugman, Steven Levitt, and John A. Paulos. These are an unexpected delight. If Dodge’s book is a course on game theory, these authors are guest lecturers. It takes humility to step aside for guest lecturers. But typical of anytime one can find guest lecturers of this quality, the “students”—Dodge’s readers—benefit.

The Axelrod excerpt is notable because Dodge not only quotes his classic book extensively, he includes personal correspondence with him. Through this we hear Axelrod on the problem of noise for a Tit-for-Tat strategy, a discussion that concludes with his stating a preference for Tit-for-Tat with “a little generosity or contrition.”

Dodge uses such exchanges throughout the book. We learn directly from Singapore’s Prime Minister, Lee Hsien Loong, about the influence of Schelling’s tipping point research on the country’s efforts to fight segregation. We hear from Robert McNamara, Ted Sorensen, and Sergei Krushchev (Nikita Khrushchev’s son) about strategic interaction in the Cuban Missile Crisis. And we hear from Siddharth Mohandas, a one-time editor at *Foreign Affairs*, of Schelling’s use of game theory when pushing a manuscript through

the editorial process. “The episode only increased my respect for the man,” Mohandas said. “He practices what he preaches!”

As much color as these additions bring, Dodge’s greatest contribution is weaving Schelling’s contributions and history throughout his discussion of game theory. This allows themes connecting Schelling’s work to emerge over the course of the book. We see how rooted Schelling is in real-world phenomena, and how that rootedness improves his theory. We see in his surprising conclusions that outcomes both heroic and tragic can flow from rational actors. And we see that despite this focus on rationality, he deeply appreciates the importance of the irrational.

This focus on Schelling is as it should be. But the reader senses there are corners of game theory, especially newer ones, where the light is simply not shown. It would have been nice to have these corners outlined and acknowledged, even if unelaborated, in order to position Schelling’s work (and his course) in the full field as it stands now.

But this kind of academic positioning is not the objective of the book. Dodge has other contributions to make. Indeed, it is by going beyond a standard telling of game theory that he crafts a unique book. In doing so, Dodge succeeds in rendering Schelling’s course for a general audience. The book’s format is closest to a text book, and it would work well in that capacity in undergraduate programs and professional schools. But its size, accessibility, and color make this format easy to forget. There are many chapters and supplements that would stand alone as readings in a broad range of classes. And anyone teaching a course involving strategic behavior would find the book useful for historical anecdotes and current examples.

Overall, Dodge’s book provides a solid introduction to game theory, more than expected about the field’s history, and a nice overview of Schelling’s work. In this effort, Dodge is a faithful steward of Schelling’s course, but not without the trimming, shaping, and supplementing only an outsider could provide. The result is a game theory book unlike any other.

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## D Microeconomics

*Saving for Retirement: Intention, Context, and Behavior.* By Gordon L. Clark, Kendra Strauss, and Janelle Knox-Hayes. Oxford and New York: Oxford University Press, 2012. Pp. xix, 202. \$85.00. ISBN 978-0-19-960085-4.

*JEL 2012-0716*

In the last decades, the around-the-world transformation of public and private pension schemes from defined benefit to defined contribution plans has placed increased risk and responsibility on participants. Coupled with the financial pressures on pension systems brought on by an aging population and more recently the financial crisis, this has meant that households today need to be much more financially savvy to maintain their retirement security. So far, this has proved to be a challenge and the behavioral economics literature has provided a number of clues to individual retirement behavior. In this book, Clark, Strauss and Knox-Hayes take the analysis one step further and challenge the standard economic model by integrating the impact of social and environmental factors in participants’ financial decision making.

Chapter 1 sets the scene and describes the development of pensions and the increased need for financial decision making. The authors review the literature and demonstrate that individuals on average are risk averse, shy away from financial opportunities that are rational according to theory and are not very good at using information. But the evidence also reveals a considerable variation in financial literacy: 20 percent of the population appears to have very poor knowledge while 20 percent can be characterized as sophisticated investors. In between a group that at best can be characterized as naïve investors, but who are expected to be active and well-informed consumers of financial products. To further understand individual behavior in financial markets the authors argue that is necessary to integrate the environment in which individuals live: cultural and societal interactions matter for how we make decisions as well as personal relationships. Chapter 2 presents the theoretical framework. The chapter builds on the findings in behavioral economics but add the interaction of environment and behavior. In the following two chapters, the authors present empirical analysis using data from the United