

## Studies in Economic Theory

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Rationality and Equilibrium

Charalambos D. Aliprantis  
Rosa L. Matzkin · Daniel L. McFadden  
James C. Moore · Nicholas C. Yannelis  
Editors

# Rationality and Equilibrium

A Symposium in Honor  
of Marcel K. Richter

With 8 Figures  
and 3 Tables

 Springer

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# Foreword to ‘Rationality and Equilibrium’ – A Symposium in honor of Marcel K. Richter

**Charalambos D. Aliprantis<sup>1</sup>, Rosa L. Matzkin<sup>2</sup>, Daniel McFadden<sup>3</sup>,  
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This collection of papers is dedicated to Marcel K. Richter, in appreciation of the fundamental impact that his research, mentoring, and personality has had on economics and on economists.

Marcel K. Richter’s research has taken economic theory to places it needed to go, and along the way has left tight, crisp, important, and beautifully elegant results. Each paper is a destination, a result that is worth the trip, a stop that instructs the student on the effectiveness of mathematics and the liberating power of crystalline logic. No paper of his is carelessly written.

A good representative of Ket Richter’s work is his 1966 *Econometrica* paper “Revealed Preference Theory.” This paper has had a profound influence, not only on the problem of preference characterization, but also on the use of powerful logical tools in economic theory. Using set theory and mathematical logic, it provided a simple, clear, and general method to address the topic of consumer rationality, which strongly contrasted with the complex alternative literature on revealed preference and integrability theory. This was followed by “Rational Choice” and by the joint work with Leonid Hurwicz, “Revealed Preference Without Demand Continuity Assumptions,” both published in *Preferences, Utility and Demand*, edited by J. Chipman, L. Hurwicz, M.K. Richter, and H. Sonnenschein (1971).

Many other topics in economic theory benefited from Ket Richter’s lucidity. He developed fundamental relationships between preference, utility and demand, in, among others, “Continuous and Semicontinuous Utility” (IER 1980), “Duality and Rationality” (JET 1979), “An Integrability Condition with Applications to Utility Theory and Thermodynamics” (with Leonid Hurwicz, JME 1979), and “Ville Axioms and Consumer Theory” (with Leonid Hurwicz, *Econometrica* 1979). Together with G. Fuhrken, he wrote “Polynomial Utility” (ET 1991) and “Additive Utility” (ET 1991). With Taesung Kim he wrote “Nontransitive Nontotal Consumer Theory” (JET 1986). With Rosa L. Matzkin, he provided conditions for rationalization of finite demand observations, in “Testing Strictly Concave Rationality” (JET, 1991), and with Kam Chau Wong, he provided conditions for the existence of a concave utility function on finite sets, in “Concave Utility on Finite Sets”

(JET 2004). His “Cardinal Utility, Portfolio Selection and Taxation” (RES 1960) developed the theory of portfolio demand under the assumption that the utility of the investor depended only on characteristics of the probability distribution of the portfolio’s uncertain earnings.

The theory of the core and Walrasian allocations benefited from Ket Richter’s major contributions, such as “Existence of Nonatomic Core Walras Allocations” (JET 1986) and “The Core-Walras Equivalence” (JET 1984), both co-authored with Thomas Armstrong, and from “Coalitions, Core and Competition” (JET 1971). In “Invariance Axioms and Economic Indexes” (*Econometrica* 1966), he contributed to the axiomatic foundations of index number theory. With Leonid Hurwicz, Ket generalized constrained maximization and implicit function theory in “Optimization and Lagrange Multipliers” and in “Implicit Functions and Diffeomorphisms without  $C^1$ ” (both published in *Advances in Mathematical Economics* 2003).

More recently, with Kam Chau Wong, Ket Richter has moved forward the theory of bounded rationality, by studying issues involving the computability and definability of utility, demand, and equilibrium. Some of the papers in this series are “Computable Preference and Utility” (JME 1999), “Noncomputability of Competitive Equilibrium” (ET 1999), and “Definable Utility in O-Minimal Structures” (JME 2000).

Revealed preference is, however, the topic with which Marcel K. Richter is most associated. Besides the papers mentioned above on this topic, other classics are his paper with Leonard Shapiro, “Revelations of a Gambler” (JME 1978); his well known paper with Daniel McFadden, “Stochastic Rationality and Revealed Stochastic Preference” (in *Preference, Uncertainty and Rationality*, edited by J. Chipman, D. McFadden, and M.K. Richter, 1990), which laid the foundation for the existence of a random utility rationalization of probabilistic choice; and his joint paper with Andreu MasColell, Rolf Mantel, and Daniel McFadden, “A Characterization of Community Excess Demand Functions” (JET 1974), in which revealed preference theory was used to demonstrate that a variant of the Sonnenschein-Debreu characterization held without the added restriction to a strictly positive closed price cone.

Marcel K. Richter’s mentoring has been as unique as his research. The input and dedication he has demonstrated in his research has paralleled the input and dedication he has given to his students. For Ket Richter, no student thesis is ready to be defended until all ideas are clearly presented, all details are worked out, and all the lines of the thesis have undergone the close scrutiny of his red pen. In fact, Ket Richter has been a consummate mentor. All University of Minnesota students in economics have benefited from Ket’s friendly help and open door, and his willingness to take up any topic. Ket’s personality is as impressive as, and very much in line with, his research. He truly cares about each person and makes his or her happiness his own concern.

The papers assembled in this issue are by colleagues, students, and admirers of Marcel K. Richter. They deal with topics deeply connected to his work and interests, such as preferences, demand, equilibrium, core allocations, and testable restrictions. On behalf of everybody who has contributed to this symposium, we wish Ket all the best and thank him for his many contributions.

# Table of Contents

<b>Foreword to “Rationality and Equilibrium – A Symposium in Honor of Marcel K. Richter”</b> <i>Charalambos D. Aliprantis, Rosa L. Matzkin, Daniel L. McFadden, James C. Moore, Nicholas C. Yannelis</i> . . . . .	V
<b>Revealed stochastic preference: a synthesis</b> <i>Daniel L. McFadden</i> . . . . .	1
<b>Communication in dynastic repeated games: “whitewashes” and “coverups”</b> <i>Luca Anderlini and Roger Lagunoff</i> . . . . .	21
<b>The structure of the Nash equilibrium sets of standard 2-player games</b> <i>Lin Zhou</i> . . . . .	57
<b>Nash equilibrium in games with incomplete preferences</b> <i>Sophie Bade</i> . . . . .	67
<b>Remarks concerning concave utility functions on finite sets</b> <i>Yakar Kannai</i> . . . . .	91
<b>Walrasian versus quasi-competitive equilibrium and the core of a production economy</b> <i>James C. Moore</i> . . . . .	103
<b>Characterization and incentive compatibility of Walrasian expectations equilibrium in infinite dimensional commodity spaces</b> <i>Carlos Hervés-Beloso, Emma Moreno-García, Nicholas C. Yannelis</i> . . . . .	119
<b>Comparative statics and laws of scarcity for games</b> <i>Alexander Kovalenkov and Myrna Wooders</i> . . . . .	141
<b>Existence of equilibria for economies with externalities and a measure space of consumers</b> <i>Bernard Cornet and Mihaela Topuzu</i> . . . . .	169
<b>Identification of consumers’ preferences when their choices are unobservable</b> <i>Rosa L. Matzkin</i> . . . . .	195

<b>Log-concave probability and its applications</b>	
<i>Marc Bagnoli and Ted Bergstrom</i> .....	217
<b>Notes on stochastic choice</b>	
<i>Andreu Mas-Colell</i> .....	243