

Studies in Economic Theory

Editors

Charalambos D. Aliprantis
Department of Mathematics
IUPUI
1125 E 38th Street
Indianapolis, IN 46205-2810
USA

Nicholas C. Yannelis
Department of Economics
University of Illinois
Champaign, IL 61820
USA



Titles in the Series

M. Ali Khan and Nicholas C. Yannelis (Eds.)

Equilibrium Theory in Infinite Dimensional Spaces

Charalambos D. Aliprantis · Kim C. Border
Wilhelmus A. J. Luxemburg

Positive Operators, Riesz Spaces, and Economics

Proceedings of a Conference at Caltech, Pasadena,
California, April 16-20, 1990

Springer-Verlag Berlin Heidelberg GmbH

Charalambos Aliprantis
Department of Mathematics
IUPUI
1125 East 38th Street
Indianapolis, IN 46205-2810
USA

Kim C. Border
Division of Humanities and Social Sciences
California Institute of Technology
Pasadena, CA 91125
USA

Wilhelmus A. J. Luxemburg
Department of Mathematics
California Institute of Technology
Pasadena, CA 91125
USA

ISBN 978-3-642-63502-1 ISBN 978-3-642-58199-1 (eBook)
DOI 10.1007/978-3-642-58199-1

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in other ways, and storage in data banks. Duplication of this publication or parts thereof is only permitted under the provisions of the German Copyright Law of September 9, 1965, in its version of June 24, 1985, and a copyright fee must always be paid. Violations fall under the prosecution act of the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1991

Originally published by Springer-Verlag Berlin Heidelberg New York Tokyo in 1991

Softcover reprint of the hardcover 1st edition 1991

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

2142/7130-543210 - Printed on acid-free paper

Foreword

Over the last fifty years advanced mathematical tools have become an integral part in the development of modern economic theory. Economists continue to invoke sophisticated mathematical techniques and ideas in order to understand complex economic and social problems. In the last ten years the theory of Riesz spaces (vector lattices) has been successfully applied to economic theory. By now it is understood relatively well that the lattice structure of Riesz spaces can be employed to capture and interpret several economic notions.

On April 16–20, 1990, a small conference on Riesz Spaces, Positive Operators, and their Applications to Economics took place at the California Institute of Technology. The purpose of the conference was to bring mathematicians specialized in Riesz Spaces and economists specialized in General Equilibrium together to exchange ideas and advance the interdisciplinary cooperation between mathematicians and economists. This volume is a collection of papers that represent the talks and discussions of the participants at the week-long conference.

We take this opportunity to thank all the participants of the conference, especially those whose articles are contained in this volume. We also greatly appreciate the financial support provided by the California Institute of Technology. In particular, we express our sincerest thanks to David Grether, John Ledyard, and David Wales for their support.

Finally, we would like to thank Susan Davis, Victoria Mason, and Marge D'Elia who handled the delicate logistics for the smooth running of the conference.

June, 1991

C. D. Aliprantis, K. C. Border, and W. A. J. Luxemburg

Contents

Foreword	v
Valuation and Optimality in Exchange Economies with a Countable Number of Agents	1
C. D. Aliprantis, D. J. Brown, and O. Burkinshaw	
Equilibrium Points of Non-Cooperative Random and Bayesian Games	23
N. C. Yannelis and A. Rustichini	
Equilibria of Large Games with Imperfect Observability	49
S. K. Chakrabarti and M. A. Khan	
Functional Analytic Tools for Expected Utility Theory	69
K. C. Border	
Remarkable Points and $X_{(N)}$-spaces	89
Y. A. Abramovich	
Integration with Respect to Finitely Additive Measures	109
W. A. J. Luxemburg	
Lattice-Ordered Algebras and f-Algebras: A Survey	151
C. B. Huijsmans	
Approximating Derivative Securities in f-Algebras	171
D. J. Brown, C. B. Huijsmans, and B. de Pagter	
Some Unpleasant Objects in a Non-separable Hilbert Space ...	179
M. A. Khan and A. Rustichini	
The Hopf Decomposition in Riesz Spaces	189
R. Zaharopol	
Frobenius Decomposition of Positive Compact Operators	195
R. Jang and H. D. Victory, Jr.	
Irreducible Positive Operators and Hyperinvariant Ideals	225
Y. A. Abramovich, C. D. Aliprantis, and O. Burkinshaw	