

# Lecture Notes in Economics and Mathematical Systems

604

Founding Editors:

M. Beckmann  
H.P. Künzi

Managing Editors:

Prof. Dr. G. Fandel  
Fachbereich Wirtschaftswissenschaften  
Fernuniversität Hagen  
Feithstr. 140/AVZ II, 58084 Hagen, Germany

Prof. Dr. W. Trockel  
Institut für Mathematische Wirtschaftsforschung (IMW)  
Universität Bielefeld  
Universitätsstr. 25, 33615 Bielefeld, Germany

Editorial Board:

A. Basile, A. Drexl, H. Dawid, K. Inderfurth, W. Kürsten

Donald Brown · Felix Kubler

---

# Computational Aspects of General Equilibrium Theory

Refutable Theories of Value

 Springer

Professor Donald Brown  
Department of Economics  
Yale University  
27 Hillhouse Avenue  
Room 15B  
New Haven, CT 06520  
USA  
donald.brown@yale.edu

Professor Felix Kubler  
Department of Economics  
University of Pennsylvania  
3718 Locust Walk  
Philadelphia, PA 19104-6297  
USA  
fkubler@gmail.com

ISBN 978-3-540-76590-5

e-ISBN 978-3-540-76591-2

DOI 10.1007/978-3-540-76591-2

Lecture Notes in Economics and Mathematical Systems ISSN 0075-8442

Library of Congress Control Number: 2007939284

© 2008 Springer-Verlag Berlin Heidelberg

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 microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, 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.

*Production:* LE-TeX Jelonek, Schmidt & Vöckler GbR, Leipzig  
*Cover design:* WMX Design GmbH, Heidelberg

Printed on acid-free paper

9 8 7 6 5 4 3 2 1

springer.com

To Betty, Vanessa, Barbara and Elizabeth Rose  
DJB

To Bi and He  
FK

---

## Preface

This manuscript was typeset in Latex by Mrs. Glena Ames. Mrs. Ames also drafted all the figures and edited the entire manuscript. Only academic custom prevents us from asking her to be a co-author. She has our heartfelt gratitude for her good humor and her dedication to excellence.

New Haven and Philadelphia,  
December 2007

*Donald J. Brown*  
*Felix Kubler*

---

# Contents

<b>Refutable Theories of Value</b> <i>Donald J. Brown, Felix Kubler</i> . . . . .	1
<b>Testable Restrictions on the Equilibrium Manifold</b> <i>Donald J. Brown, Rosa L. Matzkin</i> . . . . .	11
<b>Uniqueness, Stability, and Comparative Statics in Rationalizable Walrasian Markets</b> <i>Donald J. Brown, Chris Shannon</i> . . . . .	27
<b>The Nonparametric Approach to Applied Welfare Analysis</b> <i>Donald J. Brown, Caterina Calsamiglia</i> . . . . .	41
<b>Competition, Consumer Welfare, and the Social Cost of Monopoly</b> <i>Yoon-Ho Alex Lee, Donald J. Brown</i> . . . . .	47
<b>Two Algorithms for Solving the Walrasian Equilibrium Inequalities</b> <i>Donald J. Brown, Ravi Kannan</i> . . . . .	69
<b>Is Intertemporal Choice Theory Testable?</b> <i>Felix Kubler</i> . . . . .	79
<b>Observable Restrictions of General Equilibrium Models with Financial Markets</b> <i>Felix Kubler</i> . . . . .	93
<b>Approximate Generalizations and Computational Experiments</b> <i>Felix Kubler</i> . . . . .	109

<b>Approximate Versus Exact Equilibria in Dynamic Economies</b> <i>Felix Kubler, Karl Schmedders</i> . . . . .	135
<b>Tame Topology and <math>O</math>-Minimal Structures</b> <i>Charles Steinhorn</i> . . . . .	165
<b>References</b> . . . . .	193

---

## List of Contributors

**Donald J. Brown**

Yale University  
27 Hillhouse Avenue  
New Haven, CT 06511  
donald.brown@yale.edu

**Caterina Calsamiglia**

Universitat Autònoma de Barcelona  
Edifici B  
Bellaterra, Barcelona, Spain 08193  
caterina.calsamiglia@uab.es

**Ravi Kannan**

Yale University  
51 Prospect Street  
New Haven, CT 06511  
ravindran.kannan@yale.edu

**Felix Kubler**

University of Pennsylvania  
3718 Locust Walk  
Philadelphia, PA 19104-6297  
kubler@sas.upenn.edu

**Yoon-Ho Alex Lee**

U.S. Securities & Exchange Commission  
Washington, DC 20549  
alex.lee@aya.yale.edu

**Rosa L. Matzkin**

Northwestern University  
2001 Sheridan Road  
Evanston, IL 60208  
matzkin@northwestern.edu

**Karl Schmedders**

Northwestern University  
2001 Sheridan Road  
Evanston, IL 60208  
k-schmedders@kellogg  
.northwestern.edu

**Chris Shannon**

University of California at Berkeley  
549 Evans Hall  
Berkeley, CA 94720  
cshannon@econ.berkeley.edu

**Charles Steinhorn**

Vassar College  
124 Raymond Avenue  
Poughkeepsie, NY 12604  
steinhorn@vassar.edu