

Advances in MATHEMATICAL ECONOMICS

Managing Editors

Shigeo Kusuoka

The University of Tokyo
Tokyo, Japan

Toru Maruyama

Keio University
Tokyo, Japan

Editors

Robert Anderson

University of California,
Berkeley
Berkeley, USA

Jean-Michel Grandmont

CREST-CNRS
Malakoff, France

Kunio Kawamata

Keio University
Tokyo, Japan

Charles Castaing

Université Montpellier II
Montpellier, France

Norimichi Hirano

Yokohama National
University
Yokohama, Japan

Hiroshi Matano

The University of Tokyo
Tokyo, Japan

Francis H. Clarke

Université de Lyon I
Villeurbanne, France

Tatsuro Ichiishi

The Ohio State
University
Ohio, USA

Kazuo Nishimura

Kyoto University
Kyoto, Japan

Egbert Dierker

University of Vienna
Vienna, Austria

Alexander D. Ioffe

Israel Institute of
Technology
Haifa, Israel

Yoichiro Takahashi

The University of Tokyo
Tokyo, Japan

Darrell Duffie

Stanford University
Stanford, USA

Alexander D. Ioffe

Israel Institute of
Technology
Haifa, Israel

Akira Yamazaki

Hitotsubashi University
Tokyo, Japan

Lawrence C. Evans

University of California,
Berkeley
Berkeley, USA

Seiichi Iwamoto

Kyushu University
Fukuoka, Japan

Makoto Yano

Kyoto University
Kyoto, Japan

Takao Fujimoto

Fukuoka University
Fukuoka, Japan

Kazuya Kamiya

The University of Tokyo
Tokyo, Japan

Aims and Scope. The project is to publish *Advances in Mathematical Economics* once a year under the auspices of the Research Center for Mathematical Economics. It is designed to bring together those mathematicians who are seriously interested in obtaining new challenging stimuli from economic theories and those economists who are seeking effective mathematical tools for their research.

The scope of *Advances in Mathematical Economics* includes, but is not limited to, the following fields:

- Economic theories in various fields based on rigorous mathematical reasoning.
- Mathematical methods (e.g., analysis, algebra, geometry, probability) motivated by economic theories.
- Mathematical results of potential relevance to economic theory.
- Historical study of mathematical economics.

Authors are asked to develop their original results as fully as possible and also to give a clear-cut expository overview of the problem under discussion. Consequently, we will also invite articles which might be considered too long for publication in journals.

More information about this series at <http://www.springer.com/series/4129>

Shigeo Kusuoka · Toru Maruyama
Editors

Advances in Mathematical Economics

Volume 21

 Springer

Editors

Shigeo Kusuoka
Professor Emeritus
The University of Tokyo
Tokyo, Japan

Toru Maruyama
Professor Emeritus
Keio University
Tokyo, Japan

ISSN 1866-2226

ISSN 1866-2234 (electronic)

Advances in Mathematical Economics

ISBN 978-981-10-4144-0

ISBN 978-981-10-4145-7 (eBook)

DOI 10.1007/978-981-10-4145-7

Library of Congress Control Number: 2017935013

© Springer Nature Singapore Pte Ltd. 2017

This work is subject to copyright. All rights are reserved by the Publisher, 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 any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, 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.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer Nature Singapore Pte Ltd.

The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Contents

Some Problems in Second Order Evolution Inclusions with Boundary Condition: A Variational Approach	1
Charles Castaing, Truong Le Xuan, Paul Raynaud de Fitte and Anna Salvadori	
On Sufficiently-Diffused Information in Bayesian Games: A Dialectical Formalization	47
M. Ali Khan and Yongchao Zhang	
On Supermartingale Problems	75
Shigeo Kusuoka	
Bolza Optimal Control Problems with Linear Equations and Periodic Convex Integrands on Large Intervals	99
Alexander J. Zaslavski	
Index	161