

INSURANCE IN THE POST-CRISIS ERA



Centar za izdavačku delatnost
EKONOMSKI FAKULTET U BEOGRADU

Publisher
University of Belgrade, Faculty of Economics
Publishing Centre
Kamenička 6, tel. 3021-045, faks 3021-065
E-mail: cid@ekof.bg.ac.rs

Dean of the Faculty of Economics
Branislav Boričić, PhD

Cover Design
ČUGURA PRINT

Printing
ČUGURA PRINT - Beograd

Published
2018.

Reviewers
Marina Evgenevna Baskakova, PhD
Željko Šain, PhD
Predrag Stančić, PhD
Mirko Vujošević, PhD

ISBN: 978-86-403-1548-7

© 2018.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of the authors.

INSURANCE IN THE POST-CRISIS ERA

Authors

Jelena Kočović	Atila Savai
Marija Koprivica	Željko Vojinović
Blagoje Paunović	Nataša Tešić
Matija Šenk	Mihailo Paunović
Andrej Nemec	Jelena Doganjić
Jasmina Selimović	Živorad Ristić
Tea Mioković	Irena Janković
Željko Jović	Svetlana Popović
Milena Lutovac	Nebojša M. Ralević
Nikola Rodić	Marija Kerkez
Biljana Jovanović Gavrilović	Nenad Milikić
Mirjana Gligorić	Valeriy Baskakov
Biljana Radivojević	Yevgeny Yanenko
Đorđe Đukić	Alexander Erkovich
Mališa Đukić	Sanja Živković
Evica Petrović	Velimir Lukić
Jelena Z. Stanković	Alesandar Živković
Mirjana Radović Marković	Aleksadar Grašić
Gorana Krstić	Branko Pavlović
Aleksandra Anić	Jasna Babić
Saša Ranđelović	Milica Kočović
Dejan Trifunović	Radojko Lukić
Đorđe Mitrović	Mihailo Kočović
Vladimir Kaščelan	Vesna Rajić
Milijana Novović Burić	Jelica Eremić-Đođić
Julija Cerović Smolović	Otilija Sedlak
Tatjana Rakonjac-Antić	Aleksandra Tomić

Editors

Jelena Kočović, PhD
Biljana Jovanović Gavrilović, PhD
Branislav Boričić, PhD
Mirjana Radović Marković, PhD

Foreword

Key challenges for European insurers in the post-crisis era are modest economic growth, unfavorable investment environment, regulatory changes and rising frequency, as well as the intensity, of catastrophic losses. Along with the implementation of the new Solvency II regulatory framework, there has been an increase in monetary and political uncertainty, causing instability of the capital market and the insurance sector. In response to the recession that has followed the crisis, central banks of leading economies, including the European Central Bank, have lowered reference interest rates, striving to keep them at a low level with their interventions. Aimed at stabilizing the financial system and accelerating economic recovery, such a monetary policy has led to record low interest rates.

Persistently low interest rates affect both the assets and liabilities of insurance companies. On the one hand, the investment returns of the insurers are limited, since fixed income instruments prevail in their investment portfolios. On the other hand, the present value of insurance liabilities increases when lower rates are used for their discounting. Low interest rates pose a particular risk for life insurers, who are faced with the inability to achieve the guaranteed minimum return for their policyholders.

In such unfavorable economic conditions, a new regulatory framework for EU (re)insurers – Solvency II has entered into force as of January 2016, after 15 years of development. In May 2017, just as the insurers completed the first annual reporting cycle, a new accounting standard for insurance contracts – IFRS 17 was published, after 20 years of development. Its implementation from January 2021 will mark the beginning of a new era in the accounting practice of insurance companies. New regulatory and reporting requirements are, in themselves, a challenge for insurers, even greater if they are incompatible. The initial results of Solvency II application, the preparation for the IFRS 17 introduction, as well as their similarities and differences are the subject of the analysis of the first part of the monograph, while the relevant macroeconomic framework is described in the second part.

Particular attention in the third part of the monograph is given to contemporary problems encountered in the life and non-life insurance markets, their imperfections and development potentials, as well as to the

new products in these markets. The fourth part of the monograph deals with insurance products related to catastrophic risks. Measuring catastrophic risks as the basis for forming the price of insurance products is a key factor in the successful management of these risks. All these issues were discussed through a comparative analysis of the experiences of the selected countries.

The fifth part is devoted to actuarial models used to quantify risks within the first pillar of the new regulatory regime Solvency II, as well as to actuarial modeling of bonus-malus system in motor third-party liability insurance. Digitization and blockchain technology in insurance and reinsurance as current topics are considered in the sixth part of the monograph. Finally, all of the mentioned topics are significant from the aspect of efficiency and control of insurance companies' business, as subject of analysis in the last, seventh part of the monograph.

EDITORS

TABLE OF CONTENT

FOREWORD

PART I

CONTEMPORARY CHALLENGES IN INSURANCE

CHAPTER 1: NEW CHALLENGES FOR INSURANCE COMPANIES - SOLVENCY II AND IFRS 17

(*J. Kočović, M. Koprivica, B. Paunović*)3

CHAPTER 2: SOLVENCY 2: YESTERDAY, TODAY AND TOMORROW

(*M. Šenk, A. Nemeč*).....29

CHAPTER 3: EFFECTS AND PERSPECTIVE OF THE NEW EU REGULATORY FRAMEWORK SOLVENCY II

(*J. Selimović, T. Mioković*)49

CHAPTER 4: FINANCIAL INSTITUTIONS RISK PROFILE: PRUDENTIAL PERSPECTIVE

(*Ž. Jović, M. Lutovac*)65

CHAPTER 5: STRESS TESTS IN INSURANCE

(*N. Rodić*)89

PART II

MACROECONOMIC FRAMEWORK FOR INSURANCE MARKET DEVELOPMENT

CHAPTER 6: MACROECONOMIC RESULTS AND DEVELOPMENT CHALLENGES IN ECONOMY OF SERBIA

(*B. Jovanović Gavrilović, M. Gligorić, B. Radivojević*)107

CHAPTER 7: INTEREST RATE POLICY OF THE FED AND ECB: INFLUENCE ON INVESTMENT ENVIRONMENT FOR INSURERS

(*Đ. Đukić, M. Đukić*)125

CHAPTER 8: ECONOMIC DETERMINANTS OF INSURANCE DEMAND IN THE REPUBLIC OF SERBIA

(*E. Petrović, J. Z. Stanković*)135

CHAPTER 9: ENHANCING RESILIENCE OF SMEs THROUGH INSURANCE IN SERBIA <i>(M. Radović Marković)</i>	155
--	-----

PART III

PROBLEMS IN THE INSURANCE MARKET

CHAPTER 10: HARMONISATION OF SERBIAN STATISTICS WITH THE EU STANDARDS IN THE CONTEXT OF INSURANCE SERVICES <i>(G. Krstić, A. Anić)</i>	169
--	-----

CHAPTER 11: IMPERFECTIONS OF NON-LIFE INSURANCE MARKET IN SERBIA <i>(S. Randelović, D. Trifunović, Đ. Mitrović)</i>	187
---	-----

CHAPTER 12: FACTOR ANALYSIS OF LIFE INSURANCE DEVELOPMENT IN MONTENEGRO <i>(V. Kaščelan, M. Novović Burić, J. Cerović Smolović)</i>	205
---	-----

CHAPTER 13: NEW CHALLENGES IN THE PENSION INSURANCE MARKET IN THE REPUBLIC OF SERBIA <i>(T. Rakonjac-Antić)</i>	219
---	-----

CHAPTER 14: DEVELOPMENT OF NEW INSURANCE PRODUCTS IN SERBIA BASED ON THE COMPARISON WITH PRODUCTS FROM THE HUNGARIAN INSURANCE MARKET <i>(A. Savai, Ž. Vojinović)</i>	235
---	-----

PART IV

CATASTROPHE RISK MANAGEMENT

CHAPTER 15: POSSIBILITIES OF MEASURING CATASTROPHIC RISKS <i>(N. Tešić, M. Paunović)</i>	253
--	-----

CHAPTER 16: CATASTROPHE INSURANCE – CONTEMPORARY TRENDS <i>(J. Doganjić, Ž. Ristić)</i>	275
---	-----

CHAPTER 17: CATASTROPHE BONDS MARKET – LATEST TRENDS IN MANAGING CATASTROPHE RISKS <i>(I. Janković, S. Popović)</i>	291
---	-----

PART V
ACTUARIAL RISK MODELLING

CHAPTER 18: UNCERTAINTY ANALYSIS AND RISK MODELING IN INSURANCE
(N. M. Ralević, M. Kerkez)309

CHAPTER 19: RISK PARAMETRISATION IN PARTIAL INTERNAL MODEL
(N. Milikić)327

CHAPTER 20: ACTUARIAL MODELING OF AN OPEN BONUS-MALUS SYSTEM, BASED ON THE EXAMPLE OF THE RUSSIAN CMTPL SYSTEM
(V. Baskakov, Y. Yanenko, A. Erkovich)343

PART VI
DIGITALIZATION AND BLOCKCHAIN TECHNOLOGY IN INSURANCE

CHAPTER 21: DIGITAL INSURANCE
(Ž. Vojinović, S. Živković)359

CHAPTER 22: LEVERAGING POTENTIAL OF MOBILE FINANCIAL SERVICES - CASE OF BANKING AND INSURANCE
(V. Lukić, A. Živković, A. Grašić)375

CHAPTER 23: BLOCKCHAIN TECHNOLOGY IN INSURANCE AND REINSURANCE
(B. Pavlović).....395

CHAPTER 24: INFORMATION MANAGEMENT SYSTEMS IN INSURANCE
(J. Babić, M. Kočović)411

PART VII
EFFICIENCY AND CONTROL OF INSURANCE COMPANIES

CHAPTER 25: ANALYSIS OF THE EFFICIENCY OF INSURANCE COMPANIES
(R. Lukić)429

CHAPTER 26: EFFECTS OF INVESTING IN MARKETING ON THE CALCULATED PREMIUM <i>(M. Kočović, V. Rajić)</i>	441
CHAPTER 27: DEFINING THE CONTROL POINTS OF FORENSIC AUDIT IN THE INSURANCE SECTOR <i>(J. Eremić-Đođić, O. Sedlak, A. Tomić)</i>	457
REFERENCES	473