



GRUPE CONSULTATIF ACTUARIEL EUROPEEN

SUMMER SCHOOL 2005

ORGANIZED BY THE ISTITUTO ITALIANO DEGLI ATTUARI
WITH THE ASSISTANCE OF THE MIB SCHOOL OF MANAGEMENT - TRIESTE

MODELLING MORTALITY DYNAMICS FOR PENSIONS AND ANNUITY BUSINESS

Trieste, 25 - 27 July 2005

MIB School of Management
via de Marchesetti, 6 - I 34142 Trieste - Italy

Overview

The Istituto Italiano degli Attuari is pleased to organise the Groupe Consultatif 2005 Summer School, which will be held in Trieste at the MIB School of Management. The MIB School is housed in the Ferdinando Palace, located about 3 km from the city centre.

In the context of Continuing Professional Development (CPD), the Groupe Consultatif Summer Schools tend to be structured learning programmes for people interested in developing their knowledge on a particular topic. Mortality improvements, uncertainty in future mortality trends and the relevant impact on annuities and pension schemes constitute particularly important topics in the field of actuarial mathematics and life insurance techniques. Hence the theme "Modelling Mortality Dynamics for Pensions and Annuity Business". This Summer School will deal in particular with the following issues: Pricing annuities; Mortality trends; Forecasting mortality (with applications and examples); longevity risk and its actuarial perspectives

Lecturers

Michel Denuit, Professor of Statistics at the Catholic University of Louvain. He is the author of several papers on Statistics, Actuarial mathematics and Risk theory.

Steven Haberman, Professor of Actuarial Science in the Cass Business School, City University, London, and Director of the Actuarial Research Centre. He has published many papers and co-authored several books in the field of actuarial science.

Annamaria Olivieri, Professor of Financial Mathematics at the University of Parma. She is the author of several papers concerning actuarial mathematics and life and health insurance techniques.

Ermanno Pitacco, Professor of Actuarial Mathematics at the University of Trieste, Academic Director of the Master in Insurance and Risk Management at the MIB School of Management, Trieste. He has published many papers and textbooks on actuarial mathematics and life insurance techniques.

Organizing Committee

Carla Angela (President of Istituto Italiano degli Attuari)
Vladimir Nanut (Dean of the MIB School of Management, Trieste)
Annamaria Olivieri (University of Parma)
Ermanno Pitacco (University of Trieste)

Summer School Secretariat

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Summer School Programme

MODELLING MORTALITY DYNAMICS FOR PENSIONS AND ANNUITY BUSINESS

1. INTRODUCTION: PRICING ANNUITIES
 - 1.1 The early actuarial model
 - 1.2 Mortality: "old" assumption vs new scenario
 - 1.3 The annuitisation guarantee

2. MORTALITY TRENDS
 - 2.1 Survival tables
 - 2.2 Curves of deaths
 - 2.3 Mortality profiles
 - 2.4 Life expectancy and other markers
 - 2.5 Mortality scenarios: rectangularization and expansion
 - 2.6 Impact on actuarial values of annuities

3. FORECASTING MORTALITY: A REVIEW
 - 3.1 A dynamic approach to mortality
 - 3.1.1 Single-figures versus age-specific functions
 - 3.1.2 A discrete, age-specific setting
 - 3.2 Projections methods
 - 3.2.1 Projection by extrapolation of mortality rates
 - 3.2.1.1 Reduction factors
 - 3.2.1.2 The exponential formulae
 - 3.2.1.3 Other projection formulae
 - 3.2.2 Single-entry projected tables
 - 3.2.2.1 From a double-entry to a single-entry table
 - 3.2.2.2 Age shifting
 - 3.2.3 Projecting mortality in a parametric context
 - 3.2.3.1 Mortality laws and projections
 - 3.2.3.2 Makeham's law
 - 3.2.3.3 Weibull's law
 - 3.2.3.4 Heligman-Pollard law
 - 3.2.4 A cohort approach versus a period approach
 - 3.2.5 Interpolation versus extrapolation: the limit table
 - 3.2.6 Model tables
 - 3.2.7 The Brass relational method
 - 3.2.8 The "resistance function"
 - 3.2.9 Mortality graduation over age and time
 - 3.2.10 Frailty models and mortality projections
 - 3.2.11 The Lee-Carter method: an introduction
 - 3.3 Further issues
 - 3.3.1 Projections and scenarios
 - 3.3.2 Mortality by causes
 - 3.3.3 Mortality at very old ages
 - 3.4 A historical survey: from early contributions to research in progress

- 4. FORECASTING MORTALITY: APPLICATIONS AND EXAMPLES
 - 4.1 Mortality Reduction Factors: Conventional Approach (eg CMI Bureau in UK)
 - 4.2 Mortality Reduction Factors: Modelling by GLMs
 - 4.2.1 Fitting and diagnostics
 - 4.2.2 Forecasting
 - 4.2.3 Prediction Intervals
 - 4.3 Parametric Models and Time Series Methods
 - 4.3.1 Fitting and diagnostics
 - 4.3.2 Forecasting
 - 4.3.3 Prediction Intervals
 - 4.4 Lee Carter Models: Basic Version
 - 4.4.1 Structure
 - 4.4.2 Fitting and diagnostics
 - 4.4.3 Forecasting
 - 4.4.4 Prediction Intervals
 - 4.4.5 Links to Mortality Reduction Factor Models
 - 4.5 Lee Carter Models: Advanced
 - 4.5.1 Multivariate Structures
 - 4.5.2 Cointegration and related issues
 - 4.6 Lee Carter Models: Disaggregated Populations
 - 4.7 Cohort-based Models
 - 4.7.1 GLM based models
 - 4.7.2 Lee Carter models
 - 4.8 The Poisson version of the LC model
 - 4.9 Applications to Belgian data
 - 4.10 Applications for pricing life annuities
 - 4.11 Adverse selection and risk classification
- 5. THE LONGEVITY RISK: ACTUARIAL PERSPECTIVES
 - 5.1 Modelling the longevity risk
 - 5.2 Solvency issues
 - 5.3 Life annuities: the annuitisation option
 - 5.3.1 Annuitisation guarantees and uncertainty in mortality trends
 - 5.3.2 Annuitisation guarantees: approach allowing for stochastic mortality

General Information

Dates 25 - 27 July 2005

Venue MIB School of Management, via de Marchesetti, 6 ("Ferdinando" Palace) - I 34142 Trieste - Italy

Summer School schedule

registration: 25 July, 8.30 - 9.00 am

start of lectures: 25 July, 9.00 am

close: 27 July, 6.00 pm

Language English. No simultaneous translation will be provided

Number of participants Attendance at the 2005 Summer School is limited to 40 participants. Applications will be accepted on a date basis. Applicants will be immediately informed about acceptance

Registration Form The Registration Form should be completed and returned to Summer School 2005 Secretariat. The deadline is 10 June

Registration Fee The registration fee is €350,00. The registration fee includes: lecture material; lunches and coffee-breaks on 25, 26 and 27 July (at the School venue); Summer School dinner on 26 July

Accommodation A list of hotels is enclosed. All the suggested hotels are located in the city centre, within walking distance of the railway station and the bus terminal. Participants must book hotels for themselves

Travel to Trieste

BY TRAIN. The railway station (Trieste Centrale) is located in the city centre. Trieste has connections with Venice (2 hours), Milano (4 hours by Eurostar trains), Rome (7 hours by Eurostar trains).

BY PLANE. Trieste (Ronchi dei Legionari) Airport is 33 km from the city centre. Direct daily flights from/to Munich (AirDolomiti-Lufthansa), London (RyanAir), Rome (Alitalia and AirOne) and Milano Malpensa (Alitalia) are available. SAITA buses (tickets inside the airport) run from the airport to the bus terminal in the city centre, near the railway station. The taxi fare is about €50.00. Organizers will supply 2 free shuttle buses on 24 July, from Trieste (Ronchi dei Legionari) Airport to the city centre. The first will leave in the early afternoon and the second late in the evening.

BY CAR. Trieste is connected to national and international motorway networks through Venice-Trieste A4 motorway and Trieste-Ljubljana motorway.

City transport services To get to the Summer School venue from the city centre, bus lines 11 and 25 (ask for "Ferdinando") can be used. Buy the ticket at a newsagent or using a ticket dispenser; tickets are not available on buses.

Scholarships A contribution to cover the Summer School expenses can be provided for two young actuaries (under 30) from emerging countries. Applicants are requested to submit the Registration Form with a curriculum vitae to Summer School 2005 Secretariat not later than 15 May. The scholarships will cover travelling and hotel expenses as well as the registration fee up to a maximum amount of €1,000

Cancellation policy The registration fee is refundable provided the 2005 Summer School Secretariat is notified in writing on or before 30 June. There is €100 administrative fee for all refunds. After 30 June there will be no refund for cancellation.

Registration Form

Please complete this Registration form in block letters and return to 2005 Summer School Secretariat by fax (+ 39 063226056) or e-mail iia@italian-actuaries.org not later than 10 June

Surname <input type="checkbox"/> Prof. <input type="checkbox"/> Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/> Mr. <input type="checkbox"/> Other		
First name		
Actuarial Association		
Mailing address: <input type="checkbox"/> business <input type="checkbox"/> home		
City	Zip Code	Country
Telephone	Telefax	E-mail
Dietary Requirements:		

Please indicate method of payment (350,00 Euro):

Please note Registration will not be effective until this payment has been received.

◇ **I am transferring € 350.00 (all costs to me) to the following bank account**

Account name: Istituto Italiano degli Attuari
 Name of Bank: Banca di Roma, Ag. Roma 100
 Bank address: Piazza del Parlamento, 18 – 00186 Rome, Italy
 Account number: 0000652836/38, ABI 03002, CAB 05001, Cod. Naz. IT, Check 12, Cin F.

Please,

- ensure that your name is included on the transfer
- enclose a copy of your bank's receipt with this form

or

◇ **I am sending a cheque, payable to Istituto Italiano degli Attuari, to the 2005 Summer School Secretariat**

Date:

Signature:

BUS SHUTTLE - Organizers will supply 2 free shuttle buses on July 24th, from Trieste (Ronchi dei Legionari) Airport to the city centre. The first will leave in the early afternoon and the second late in the evening.

If you plan to arrive by plane and you like to use the free shuttle bus, please provide us with the following information

FLIGHT FROM

AIRLINE AND FLIGHT NUMBER.....

SCHEDULED ARRIVAL TIME

HOTEL INFORMATION

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COLOMBIA

via della Geppa, 18

☎ 040-369191, Fx 040-369644

email: colombia@hotelcolombia.it

HOTEL CONTINENTALE

via San Nicolò, 25

☎ 040-631717, Fx 040-368816

email: info@continentalehotel.com

JOLLY HOTEL

Corso Cavour, 7

☎ 040-7600055, Fx 040-362699

email: trieste@jollyhotels.it

STARHOTEL SAVOIA EXCELSIOR PALACE

Riva del Mandracchio, 4

☎ 040-77941, Fx 040-638260

email: savoiaexcelsior.ts@starhotels.com

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ABBAZIA

via della Geppa, 20

☎ 040-369464, Fx 040-369769

email: hotelabbaziatrieste@interfree.it

AL VIALE

via Nordio 5

☎ 040-3480838 - Fx 040-3482708

email: info@hotelalviale.it

ALLA POSTA

Piazza Oberdan, 1

☎ 040-365208, Fx 040-633720

email: info@albergopostatrieste.it

CITTA' DI PARENZO

via degli Artisti, 8

☎ 040-631133-630119, Fx 040-367510

email: info@hotelparenzo.com

HOTEL MILANO

via Carlo Ghega, 17

☎ 040-369680, Fx 040-369727

email: info@hotel-milano.com

ITALIA

via della Geppa, 15

☎ 040-369900, Fx 040-630540

email: info@hotel-italia.it

NOVO HOTEL IMPERO

via San Anastasio, 1

☎ 040-364242, Fx 040-365023

email: impero@fenicehotels.it

ROMA

via Ghega, 7

☎ 040-370040, Fx 040-3483574

email: htlroma@libero.it