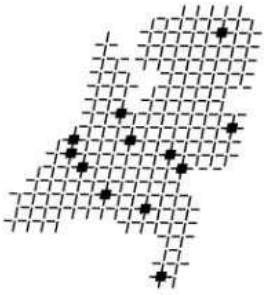
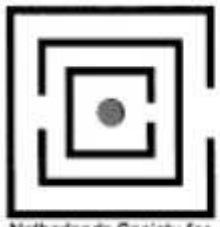


LNMB



Nederlands
Genootschap voor
Besliskunde

Leiden, 19 november 2004

Betreft: NGB/LNMB Seminar Lunteren, 20 januari 2005

Bijgaand treft u de aankondiging en het aanmeldingsformulier aan voor het 7-de "Lunteren Seminar", georganiseerd door het Nederlands Genootschap Besliskunde (NGB) in samenwerking met het Landelijk Netwerk Mathematische Besliskunde (LNMB). Het thema is dit jaar:

"Mathematical Models for Financial Optimization".

Een zevental prominente deskundigen, met uiteenlopende specialiteiten, zal dit onderwerp nader toelichten. Guus Boender is de dagvoorzitter. Wij hopen en verwachten dat dit onderwerp en het programma uw interesse hebben.

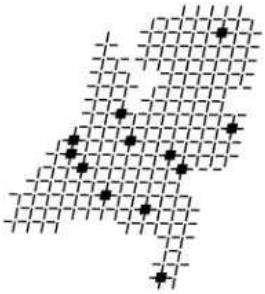
Tevens biedt deze bijeenkomst u de gelegenheid om contacten te leggen en te hernieuwen, niet alleen met de 'professionals', maar ook met personen uit de academische wereld.

Indien u aanwezig wilt zijn, dan ontvangen wij uw aanmeldingsformulier graag zo spoedig mogelijk; de inschrijving sluit op **10 januari 2005**.

Met vriendelijke groet en in de hoop u in Lunteren te mogen verwelkomen,

Namens het NGB,
Joaquim Gromicho

Namens het LNMB,
Lodewijk Kallenberg,



LNMB

Nederlands Genootschap voor Besliskunde

Netherlands Society for Operations Research

"Mathematical Models for Financial Optimization".

Jointly organized by the Landelijk Netwerk Mathematische Besliskunde (LNMB) and the Nederlands Genootschap Besliskunde (NGB), Conference Center "De Werelt", in Lunteren, on January 20, 2005.

The Landelijk Netwerk Mathematische Besliskunde (LNMB) and the Nederlands Genootschap voor Besliskunde (NGB) jointly organize the one-day seminar "Mathematical Models for Financial Optimization", in Conference Center "De Werelt" in Lunteren, on January 20, 2005. The seminar is the seventh in a series of annual seminars, following the previous successful seminars on "Operations Research & Enterprise Resource Planning" (1999), "Operations Research in Financial Management" (2000), "E-commerce & Operations Research" (2001), "Capacity management – How operations research models support decision makers" (2002), "New developments in Operations Research software" (2003) and "On-line methods: Challenges for OR in a real-time world" (2004).

Optimization models and methods play an increasingly important role in financial decision-making. No longer in our increasingly competitive society one can afford to just trust intuition and experience. Many problems in quantitative finance, originated from asset allocation, risk management, derivative pricing, and model fitting, are now routinely and efficiently approached using modern optimization techniques.

This seminar unites researchers and practitioners in the rapidly growing field of financial optimization and intends to provide a forum for innovative models and methods on new topics, novel approaches to well-known problems, success stories, and computational studies in this exciting field.

The targeted audience for this seminar includes academics researching quantitative decision-making who have been interested in mathematical finance or plan to do so, and practitioners doing quantitative modelling in the financial market.

The conference language is English. To participate at the seminar, please fill in the attached registration form and return it **before January 10, 2005**. The conference fee is € 75,- Euro for LNMB and NGB members, and € 125,- for others. You will receive an invoice after your registration form has been received. The conference fee covers lunch, coffee, tea, and drinks.

This seminar is organized during the last day of a three days conference on Operations Research. The topics of first two days are more on theory and methods and are mathematically oriented. For information see also www.lnmb.nl/conferences/lunteren2005.

SEMINAR PROGRAM

09:30 – 10:00 ***Registration and Coffee***

10:00 – 10:10 ***Welcome***

Guus Boender (ORTEC & Vrije Universiteit) chairman
ORTEC, Max Eeuwelaan 78, 3062 MA Rotterdam
gboender@ortec.nl www.ortec.com/us/board.php

Short Bio

Guus Boender is partner of ORTEC in Rotterdam, and Asset Liability Management Professor at the Free University Amsterdam. He is well known as an expert in theory and practice of financial decision models.
ORTEC is a privately owned independent company with about 300 employees with an academic background in econometrics, Operations Research and ICT. The company specializes in applying these disciplines to clarify and optimize strategic and operational planning and decision problems. Guus Boender is responsible for the activities of ORTEC in the financial and insurance markets.

10:10 – 10:50 ***A stochastic control approach to financial tracking problems***

David Yao (Columbia University, New York)
IEOR Department, Columbia University
302 Mudd building, MC 4704
500 W120 St, New York, NY 10027, USA
yao@columbia.edu www.ieor.columbia.edu/~yao/

Abstract

We study the problem of tracking a financial benchmark, a continuously compounded growth rate or a stock market index, by dynamically managing a portfolio consisting of a small number of traded stocks in the market. We formulate the tracking problem as an instance of the stochastic linear quadratic control (SLQ), involving indefinite cost matrices, and use semidefinite programming (SDP) as a computational tool to generate the optimal feedback control.
We also report numerical studies using stocks traded at Hong Kong and New York Stock Exchanges. In most cases, the tracking performance is excellent, even with rather infrequent data and portfolio updates (e.g., once per week), and is rather insensitive to whether the market is up or down, or which stocks are used to track the benchmark.
(Joint work with Shuzhong Zhang and Xunyu Zhou of the Chinese University of Hong Kong.)

Short Bio

David Yao received his Ph.D. degree from the University of Toronto in 1983, and started his academic career at Columbia University, where he became full Professor in 1988. In addition, he is the founding and current Director of the Center for the Advancement of E-Commerce Technologies (AECT) at The Chinese University of Hong Kong.
He is author/co-author of over 160 publications, three books and five edited volumes. He is an IEEE Fellow, and a recipient of numerous honors and awards, one of the last being the SIAM Outstanding Paper Prize (2003) for his novel work in financial optimization. He is holder of four U.S. patents.

11:00 – 11:40 ***Pricing Insurance Contracts: An incomplete market approach***

Antoon Pelsser (Erasmus University Rotterdam)
Econometric Institute, Erasmus University
P.O. Box 1738, 3000 DR Rotterdam
pelsser@few.eur.nl www.few.eur.nl/few/people/pelsser/

Abstract
The market for insurance contracts is an incomplete market in the sense that the insurance risks are not traded in financial markets. However, a large portion of the risk in insurance contracts consists of financial risks, and these risks can be pricing with the principle of no-arbitrage.
Using the principle of equivalent utility we derive pricing formulas for insurance contracts that are consistent with no-arbitrage pricing in financial markets.

Short Bio
Antoon Pelsser is a Market Risk Expert at ING Corporate Insurance Risk Management. He advises the ING insurance-business units on the calculation of market values and risk measures of (life-)insurance contracts and also on the optimal asset allocation to cover the insurance liabilities. He also holds a part-time position as Professor of Mathematical Finance at the Erasmus University in Rotterdam. His research interests focus on pricing models for interest rate derivatives, the pricing of insurance contracts and Asset-Liability Management (ALM).
In 1999 his PhD thesis on interest rate derivative models has been awarded the Christiaan Huygens prize by the Royal Dutch Academy of Sciences.
He has published in several academic journals and is also author of the book Efficient Methods for Valuing Interest Rate Derivatives, published by Springer Verlag.

11:50 – 12:30 ***Using Importance Sampling to assess Credit Risk Economic Capital and Economic Capital Contributions***

Pieter Klaassen (ABN AMRO Bank N.V. , Amsterdam)
ABN AMRO Bank N.V.
Group Risk Management Department Credit Risk Modelling (HQ 9052)
Gustav Mahlerlaan 10, 1082 PP Amsterdam
pieter.klaassen@nl.abnamro.com

Abstract
Economic Capital is increasingly used within financial institutions as a uniform risk measure covering different risk types and business activities. It represents the amount of money a financial institution has to hold as a buffer against potential higher-than-expected losses. In this presentation, we concentrate on the assessment of Economic Capital for the credit risks that a bank is exposed to. Besides the credit risk at portfolio level there is also interest in calculating the contribution of each single credit facility to the portfolio EC. This is called Economic Capital Contribution.
We discuss improved estimators for these quantities based on an Importance Sampling transformation. Importance sampling (IS) is a technique widely applied to reduce the variance of estimators in general. The objective in IS is to concentrate the distribution of the sample points in the parts of the distribution that are of most 'importance' instead of simply drawing randomly.
Within a credit risk setting most 'important' are extreme portfolio losses from which a high quantile is estimated. For the estimation of Economic Capital we focus on a transformation of the mean of the driving factor returns and on a transformation of the individual default probabilities.
This will allow us to simulate more losses near extreme quantiles in general. Also Extreme Value Theory is used to estimate extreme quantiles. For the estimation of Economic Capital Contributions we only change the driving factor returns. The IS transformations proposed to estimate Economic Capital and Economic Capital Contributions are tested on stylised portfolios. Results show that the variance of the estimators is reduced significantly.

Short Bio
Pieter Klaassen is senior vice-president Credit Risk Modelling within Group Risk Management of ABN AMRO Bank. He has been with ABN AMRO since 1997. Before that, he spent 3 years with Rabobank International, where he was responsible for structured product development. Pieter holds a Drs degree in econometrics from Erasmus University, and a Ph.D. degree in Operations Research from the Sloan School of Management at Massachusetts Institute of Technology.

12:00 – 13:30 ***Lunch***

13:30 – 14:10 ***Practical examples of financial modelling***

André van Vliet (ORTEC bv, Rotterdam)
ORTEC bv
Postbus 4074, 3006 AB Rotterdam
avliet@ortec.nl

Abstract

The financial world offers many challenges for people with operations research skills. Insurance companies, banks and pension funds face many mathematical problems where financial modeling and optimization can contribute significantly to their business. Clean optimization problems are not frequently encountered in the financial practice, as even straightforward portfolio optimization problems require numerous assumptions to be made first.
This should not be considered a serious drawback, as it makes the modeling of the problems at hand even more important. Besides optimization techniques, scenario analysis plays an important role in many applications. Economic scenarios form the starting point in many sophisticated ALM models for both pensions funds, insurance companies and housing corporations.
With these models, organizations can evaluate their business strategies in a risk-return context. In the matching of assets and liabilities, interesting sub-problems arise that can be solved by optimization techniques.

Short Bio

André van Vliet studied Econometrics at the Erasmus University in Rotterdam. He completed his PhD in Operations Research in 1995 with a theoretical thesis on "Worst case analysis for on-line bin packing and scheduling algorithms". During this PhD period he taught as an Assistant Professor at the Econometric Institute (Erasmus University Rotterdam) and published several research papers.
He started his professional career as a consultant within ORTEC. He served the Business Unit Logistics, became head of the Department Transport and Distribution and was part of the Management Team of the Business Unit. His fields of expertise during this period include vehicle routing, optimization algorithms and real-time planning.
In 2000 he changed his working environment to the Business Unit Finance of ORTEC, where he headed several departments. Current fields of expertise include ALM, performance measurement, risk management, financial engineering, private loans and mortgages, valuation of real estate and model development.

14:20 – 15:00 ***The practice of financial optimization***

Cees Dert (ABN AMRO, Amsterdam)
ABN AMRO Asset Mannagement
Hoogoorddreef 66-68 (AP1010)
1101 BE Amsterdam
cees.dert@nl.abnamro.com

Abstract

Making progress in theory often requires making assumptions that don't hold in practice. Nevertheless theoretical results can offer relevant insights for practitioners. The challenge for an asset manager is to asses which theoretical results are indeed useful in practice and how they can be used in the design of investment policies and in day to day money management. In this talk I'll discuss cases taken from the practice of ABN AMRO Structured Asset Management.

Short Bio

Cees Dert has been a professor in Equity Derivatives and in Quantitative portfolio Management at the Vrije Universiteit from 1998 until 2004. Since 1995, he is global head of ABN AMRO Structured Asset Management (SAM). SAM manages investment portfolios (approximately 4 billion Euros) on behalf of clients. Investment decisions for these portfolios are driven by quantitative models.

15:10 – 15:50 ***Utility and Usefulness of Stochastic Risk Models for Strategic Pension Policies***

Huub van Capelleveen (Cardano)
Beurs, World Trade Center, 11th Floor
Beursplein 37, 3011 AA Rotterdam
info@cardano.nl www.cardano.nl

Abstract
Applying strategic risk management models has expanded enormously in the last decade. Not only within banks but also increasingly within pension funds and insurance companies. Control is improved and transparency has risen. Due to ageing and deteriorated solvencies, steering possibilities are diminishing and advanced strategic investment policies become more and more important. Accurate modelling of financial instruments, like options and swaps, in the stochastic models will empower pension funds and insurance companies with an important new steering instrument.

Short Bio
Huub van Capelleveen graduated in Econometrics with a specialisation in Operations Research/ Decisional Sciences. After his studies he started as quantitative consultant at the Centre for Applied Mathematics of Rabobank Nederland in 1995. He was responsible as project manager for various projects including Asset & Liability Management and credit risk portfolio management. He subsequently joined Cardano Risk Management as a consultant specialising in the strategic use of derivatives and entered its executive ranks at the beginning of 2001.

16:00 – 16:40 ***Optimization Methods for Risk Management of Interest Rate Derivatives***

Raoul Pietersz (Erasmus University & ABN-AMRO)
Erasmus University, Econometric Institute
P.O. Box 1738, 3000 DR Rotterdam
pietersz@few.eur.nl www.few.eur.nl/few/people/pietersz/

Abstract
We consider optimization in financial models in two ways. First, an arbitrage free model can be seen as a tool to minimize variance of profit and loss (P&L) when risk managing interest rate derivatives. Recent results are presented of an empirical comparison of the hedge performance of various single-factor and multi-factor interest rate models. Second, the calibration of a pricing model to market prices is often an optimization problem. We consider a particular instance of calibrating a multi-factor interest rate model to correlation. An overview is given of available optimisation methods, including majorization and geometric programming (optimisation over manifolds).

Short Bio
Raoul Pietersz is a Ph.D. candidate at Erasmus University Rotterdam and a senior derivatives researcher at ABN AMRO Bank, in Amsterdam. His research topic is the valuation and risk management of interest rate derivatives. He has published in the Journal of Derivatives, Journal of Computational Finance, Quantitative Finance and Risk Magazine.

16:40– 17:30 ***Drinks***

REGISTRATION FORM

I hereby register for the LNBM/NGB seminar "*Mathematical Models for Financial Optimization",* which will be held in Conference Center "De Werelt", Lunteren, January 20, 2005.

Family name: ……

First name: ……

Title: ……..……

Company/Institute: …….

Address: …….

Postal Code: ……. City: ……...

Telephone number: …….. E-mail: ……...

Date: ……. Signature: ……...

Below, please tick the appropriate box:

I am:

LNMB/NGB member (Registration fee € 75): ☐

Other (Registration fee € 125): ☐

FEE PAYMENT INSTRUCTIONS WILL BE SENT TO YOU AFTER REGISTRATION

Send the registration form before January 10, 2005 by regular mail or e-mail or by fax to

Prof.dr. L.C.M. Kallenberg
Director LNMB
Mathematical Institute
Leiden University
PO Box 9512
2300 RA Leiden
Tel: 071 – 5277130
Fax: 071 - 5277101
Email: kallenberg@math.leidenuniv.nl

ADDRESS SEMINAR:

Conference Center `De Werelt'
Westhofflaan 2
Lunteren
The Netherlands
Tel: 0318 - 484641
www.congrescentrum.com

HOW TO GET THERE:

TRAIN:
Lunteren can be reached by train from Amersfoort and by train or taxi from Ede-Wageningen.
There is a taxi stand at the railway station Ede-Wageningen. Taxi drivers know "De Werelt".
For a taxi at railway station Lunteren call 0318 - 484555.
The walk from the railway station in Lunteren to "De Werelt" takes about 15 minutes.

CAR:
From A1 Amsterdam-Apeldoorn
Exit Barneveld/Ede A30 (N30) direction Ede
Exit Lunteren - follow direction from * Lunteren

From A12 Utrecht-Arnhem
Exit Ede-Noord/Barneveld (A30)
Exit Lunteren - follow direction from * Lunteren

From A15 Rotterdam-Nijmegen
Exit Kesteren N233 direction Rhenen/Veenendaal
Direction Veenendaal, than direction Veenendaal West (N224)
Direction Lunteren A30
Exit Lunteren - follow direction from * Lunteren

From * Lunteren: follow ANWB signposting “De Werelt”:
Keep driving until Dorpsstraat (shoppingstreet);
turn right direction Ede;
after the church turn left into the Boslaan;
cross the railroads; straight on;
enter the forest until the crossroads;
turn right Molenweg;
first road left (Westhofflaan), there you find signs to “De Werelt”.