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Austrian Workshop on Credit Risk Management

January 31 - February 2, 2001

Vienna University of Technology (TU Wien)
in cooperation with the Oesterreichische Nationalbank

Organizing Committee:

Organizer: **Walter Schachermayer**
Head of the Financial and Actuarial Mathematics Group at the TU Wien and head of the Scientific Association for Modern Risk Management (AMRM)

Co-Organizers: **Markus Fulmek** (Vienna University)
Thomas Hudetz (Oesterreichische Nationalbank)
Sandra Trenovatz (Organizing Manager, TU Wien)

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Address: Financial and Actuarial Mathematics Group
Vienna University of Technology (TU Wien)
Wiedner Hauptstrasse 8-10
A 1040 Wien, Austria

Workshop Location on January 31 and on February 2: TU Wien, at the above address. Please follow the signs from the main entrance to the registration desk.

Workshop Location on February 1: University of Vienna, Dr. Karl Lueger-Ring 1, A 1010 Wien.
From the main entrance, please follow the signs to registration at 'Kleiner Festsaal' (the lecture hall).

General Information

The 'Scientific Association for Modern Risk Management' and the Oesterreichische Nationalbank (the Austrian central bank) are hosting the Austrian Workshop on Credit Risk Management, January 31 - February 2, 2001. It will be a unique workshop, offering an open interface between practitioners' problems in credit risk management and solutions developed by leading researchers and bringing together both academic and industrial researchers with banking practitioners from the (mainly Austrian) credit industry and with leading banking regulators/supervisors.

The new regulatory capital framework currently under development in Basle and Brussels will soon require the Austrian credit industry to use enhanced methods and models of credit risk management. The Oesterreichische Nationalbank is directly involved in Austria's banking supervision system, and has therefore agreed to co-host this workshop.

The workshop consists of three parts, which can also be booked separately: An introductory crash course on the workshop's topic (in German) for practitioners who are not yet experts in the field of credit risk management methods (January 31), a 'practitioners' day' (February 1; with an invited dinner sponsored by the Oesterreichische Nationalbank), and a third day of 'cutting edge research' (February 2).

We will do our best to provide an attractive forum for both researchers and practitioners, thus creating a 'win-win-situation' for both sides.

Confirmed Speakers

Oliver Blümke, Credit Portfolio Analyst
Credit Risk Control, Erste Bank, Vienna

Mark H.A. Davis, Full Professor
Department of Mathematics, Imperial College, London

Darrell Duffie, Full Professor
Graduate School of Business, Stanford University, USA

Christopher C. Finger, Head of Research
RiskMetrics Group, New York

Rainer Fuhrmann, Principal & Practice Leader
Financial Markets, IBM Consulting Group

Markus Fulmek, Assistant Professor
Department of Mathematics, Vienna University

Johanna Gaier, Research position
Financial and Actuarial Mathematics Group, TU Wien

Stefan Hohl, Risk Management Auditing, Deutsche Bundesbank, Frankfurt

Andreas Ittner, Director
Financial Institutions and Markets, Oesterreichische Nationalbank

Markus Krall, Director
Oliver, Wyman & Company, Frankfurt

Walter Mussil, Quantitative Risk Analyst
Risk Management, Bank Austria, Vienna

Ludger Overbeck, Risk Management, Deutsche Bank, Frankfurt

Franz Partsch, Special Adviser for Risk Assessment Issues and Financial Statement Statistics
Credit Division, Oesterreichische Nationalbank

Stefan Pichler, Associate Professor
Department of Finance, TU Wien

Peter Schaller, Risk manager
Risk Management, Bank Austria, Vienna

Gerhard Stahl, Oberregierungsrat
Risk Management Supervision, German Federal Banking Supervisory Office (Bundesaufsichtsamt für das Kreditwesen)

Christopher Summer, Research position
Financial and Actuarial Mathematics Group, TU Wien

Georg Winckler, Rektor
University of Vienna

Josef Zechner, Full Professor
Banking and Finance, Vienna University

Michael Zerbs, Vice President
Research and Product Marketing, Algorithmics, Toronto

Preliminary Program

Wednesday, January 31, 2001: Introductory Crash Course

Members of the 'Scientific Association for Modern Risk Management' (university teachers of finance and related areas) will hold an introductory crash course for those (Austrian practitioners) who are not yet experts in the field of credit risk management methods in the afternoon of the first day (in German).

13:00 Registration
13:30 Einführung ins Kreditrisiko-Management: Messung, Modelle und Methoden (Introduction to Credit Risk Management: Measurement, Modelling and Methods)
13:30 Markus Fulmek
14:30 Stefan Pichler
15:30 Coffee Break
16:00 Johanna Gaier
17:00 Christopher Summer
18:00 End of Talks

Thursday, February 1, 2001: Practitioners' Day

The second day will feature a range of sessions with some of the leading German practitioners in the field – both from the credit industry and from banking supervision/auditing – and with experts from the two largest Austrian commercial banks and from the Oesterreichische Nationalbank. The sessions will be held in English to enable non-German speakers to take part in the discussions. The papers will be presented in the following order:

8:00 Registration
8:30 Georg Winckler: opening address
     Andreas Ittner: keynote address
9:00 Walter Mussil: Credit Risk Modelling and Analysis in Practice
10:00 Coffee Break
10:30 Stefan Hohl: The IRB Approach in the Context of the new Basel Proposal for Determining Minimum Regulatory Capital

11:30 Franz Partsch: The New Capital Adequacy Framework for Credit Risk - Possible Impact on the Austrian Banking Sector and Banking Supervision
12:15 Lunch Break (an invitation for speakers and fully paying participants)
14:00 Gerhard Stahl: Evaluating Internal Rating Systems
15:00 Markus Krall: How to Build a Rating - Technical Aspects of Development and Parametrisation of Rating Algorithms
15:45 Coffee Break
16:15 Oliver Blümke: Credit Risk in Emerging Markets
17:15 Ludger Overbeck: Stochastic Models in Credit Portfolio Management
18:15 End of Talks
19:30 or directly following the end of talks (if later): Conference Dinner (sponsored by Oesterreichische Nationalbank)

Friday, February 2, 2001: Day of 'Cutting Edge Research'

The third day will feature sessions with internationally renowned academic researchers (D. Duffie, M. Davis), leading RM software consulting companies (Algorithmics, RiskMetrics Group) and distinguished Austrian experts (J. Zechner, P. Schaller). The papers will be presented in the following order:

8:00 Registration
8:30 Darrell Duffie: Correlated Default Risk and Portfolio Credit Pricing
9:45 Coffee Break
10:15 Mark H.A. Davis: Reduced Form Models for Multiple Credit Risks
11:30 Josef Zechner: Equity Valuation and Expected Default Frequencies
12:30 Lunch Break
13:45 Peter Schaller: Integrating Market and Credit Risk
14:55 Michael Zerbs: Integrated Market and Credit Risk
15:40 Coffee Break
16:15 Christopher C. Finger: Enhancing Monte Carlo Techniques for Economic Capital Estimation
17:30 End of Talks – Coffee/Tea Break

Scientific Association for Modern Risk Management

The public, scientific association, which works on a non-profit basis, intends to promote and advance the exchange of information and experience in the fields of mathematical finance and risk management between academic research on the one hand, and the financial industry and its regulatory authorities on the other hand.

Modern risk management is a mathematical/methodical and also a software technological challenge. Accordingly, one of the association's priorities is informing its members about

§ advanced methods of mathematical finance

§ suitable stochastic models

§ fast numerical algorithms

§ modern methods of risk management

§ modern software technology

§ reports on concrete systems realizations in practice.

AMRM-Homepage:
   http://www.esi.ac.at/~amrm/

Friday, February 2, 2001: Day of 'Cutting Edge Research'

Additional Event

... **exclusively** for fully paying participants from the credit industry (and the media):

17:45 **Rainer Fuhrmann: Credit Risk - A Practitioner's Point of View**

18:15 **Plenary Discussion** on the topic: **'How sophisticated will the methods of credit risk management be in the Austrian banking sector by 2007'**,

with risk management consultant firms, software and data providers (present in the Austrian banking sector)

Discussion chairmen:
Engelbert Dockner and Josef Zechner
(both: Full Profs., Banking and Finance, Vienna Univ.)

Confirmed participants:
C. Finger, RiskMetrics Group, New York
R. Fuhrmann, IBM Consulting Group (Austria)
P. Göth, Deloitte & Touche GmbH (Austria)
M. Krall, Oliver/Wyman & Co., Frankfurt
S. Pichler, PricewaterhouseCoopers (Austria)
W. Wainig, Finance Trainer International (Austria)
M. Zerbs, Algorithmics, Toronto

Additional participants might still be confirmed before the Workshop.

Abstracts

Wednesday, January 31, 2001, at 13:30:

Markus Fulmek, Stefan Pichler, Johanna Gaier, Christopher Summer

Einführung ins Kreditrisiko-Management: Messung, Modelle und Methoden (Introduction to Credit Risk Management: Measurement, Modelling and Methods)

This introductory course has been designed to cover and clearly explain the theory and practice of credit risk management.

After explaining the general concept of credit risk we will first look at legal aspects and today's banking regulation. Then we will treat the issues of credit valuation, portfolio theory and the measurement of risk by explaining and discussing several models. These include rating based models (e.g. CreditMetrics), option-type models (e.g. KMV Model) and insurance models (e.g. Credit Risk Plus).

Special emphasis will be put on a comparison of the new internal models showing their advantages and disadvantages (implementation, data calibration,...).

Only this first day's program will be given in German.

Thursday, February 1, 2001, at 8:30:

Andreas Ittner

keynote address

The keynote address will provide an overview of the new capital adequacy framework and demonstrate the key role of credit risk and its management within this new framework. The talk will focus on a discussion of the main implications of the proposed new regulations on banks and on banking supervision. This discussion will highlight the importance of a comprehensive and integrated concept of credit risk management. The talk will conclude with an outlook for the likely future agenda for banks and supervisors, as well as for research in order that the new capital accord can be implemented as effectively as possible and further development of credit risk management methods and tools undertaken.

Thursday, February 1, 2001, at 9:00:

Walter Mussil

Credit Risk Modelling and Analysis in Practice

§ The rating model - major building block for The estimation of expected loss

§ The portfolio model as basis for the quantification of unexpected loss and economic capital

§ Risk measurement using simulation models – theory versus practice

§ Implementing an enterprise-wide system for credit risk management

Thursday, February 1, 2001, at 10:30:

Stefan Hohl

The IRB Approach in the Context of the new Basel Proposal for Determining Minimum Regulatory Capital

Presentation of the Basel Committee's new approach based on internal ratings to regulatory capital that more accurately reflects a bank's individual risk profile. Discussion of the key elements of the more risk sensitive IRB approach for different portfolios in the context of the foundation and advanced IRB aproach and its associated regulatory minimum requirements.

Thursday, February 1, 2001, at 11:30:

Franz Partsch

The New Capital Adequacy Framework for Credit Risk - Possible Impact on the Austrian Banking Sector and Banking Supervision

The presentation will begin with an overview of the provisions on credit risk in the new capital adequacy framework. Although data on credit risk is relatively scarce at present the main focus of the talk will be on identifying the more important issues for Austrian banks arising from the combination of banking statistics and large exposures risk data with credit quality information from rating agencies and other sources. As a first conclusion from this exercise we will endeavour to sketch out a (highly tentative) "road map" of the new capital accord for Austrian banks and banking supervisors.

Thursday, February 1, 2001, at 14:00:

Gerhard Stahl

Evaluating Internal Rating Systems

The application of internal ratings plays a central role within the current proposal of the revised Basel Accord. Therefore the need for methods to analyse the reliability of these basic inputs is obvious. The talk will consists of three parts.

The first and introductory one gives a critical review of theoretical papers that tackle the backtesting problem in the framework for credit models. The other two are devoted to a first empirical analysis of two extensive databases from two major German banks. The first one is an on-going joint work with D. Lando that analyses internal ratings of corporate firms on the basis of intensity models. The second one – an also on-going joint work with R. Kiesel – analyses country ratings on the basis of well-known cohort methods. The current discussion of backtesting ratings – or credit risk models in general - emphasizes the lack of a sufficient data history as a major drawback compared to market risk models. The talk will discuss those problems that will emerge even if a large set is available.

Thursday, February 1, 2001, at 15:00:

Markus Krall

How to Build a Rating - Technical Aspects of Development and Parametrisation of Rating Algorithms

Introduction: Requirements on the abilities of Rating-tools in a wider context of bank risk management. Various techniques and steps employed for developing rating-algorithms meeting the required qualities.

Example: The Baetge-Oliver Wyman Rating Standard

Conclusion: Future Developments

Thursday, February 1, 2001, at 16:15:

Oliver Blümke

Credit Risk in Emerging Markets

In many emerging markets, country risk is not neglectable while evaluating the credit risk of a single obligor or a whole loan portfolio, as can be seen by the Emerging Markets crises in the 1990's (Mexico 1994, Asia 1997, Russia 1998).

In theory a BB rated emerging market obligor should have the same default probability than an obligor in for example the U.S., incorporating already the country risk. Therefore a portfolio of 100 BB rated emerging market obligors should have the same probabilities of the number of defaults than a portfolio of 100 BB rated U.S. obligors. However, past has shown that in distressed situations for the sovereign, defaults of otherwise creditworthy obligors can occur. Therefore in such situations, default correlations tend to behave completely different, than in normal times.

In view of how country risk can be defined and how it is already included in many credit portfolio models an attempt will be presented how to implement such sovereign crises in a credit portfolio model.

Thursday, February 1, 2001, at 17:15:

Ludger Overbeck

Stochastic Models in Credit Portfolio Management

In the talk we present the basic probabilistic concepts in modeling the credit risk in large portfolios. Then a new risk capital allocation scheme based on the notion of coherent risk measures is constructed and compared with classical approaches based on variance/covariance analysis. In the following part of the talk we show how this model can be applied to the valuation of CLO (Collaterized Loan Obligations) and similar structured transactions. In this context we also propose some concepts to model the default time as a first hitting time of a simple transformation of a multivariate correlated Brownian motion. Then we comment on two statistical questions, namely the estimation of correlation and the validation of credit risk models.

Friday, February 2, 2001, at 8:30:

Darrell Duffie

Correlated Default Risk and Portfolio Credit Pricing

This talk addresses the risk analysis and market valuation of collateralized debt obligations (CDOs). We illustrate the effects of default correlation and over-collateralization for the market valuation and risk of CDOs. We emphasize several issues:

1. Does the manner in which conditional default risk changes over time have an important effect on market valuation of CDO tranches?

2. How does default correlation affect the valuation of senior and junior CDO tranches?

3. Is diversity score, when carefully measured, an adequate measure of correlation risk, and is risk-neutral diversity score an adequate benchmark for market valuation of CDO tranches?

The talk is based on joint work with Nicolae Garleanu.

Friday, February 2, 2001, at 10:15:

Mark H.A. Davis

Reduced Form Models for Multiple Credit Risks

'Reduced form' credit risk models are those in which a default time is characterized by a 'hazard rate' process that can be calibrated to observed term structures of credit spreads.

The hazard rate process in fact looks very much like a second factor in a short-rate based model for the term structure of interest rates, and there is a large literature on modelling and pricing in this framework. When considering products that depend on the credit performance of two or more entities, modelling the individual default times is far from the whole story: extra information must be provided to characterize the joint default distribution. This talk will survey various ways in which this can be done, including a characterization in terms of copula functions and 'contagion models' that specify mechanisms for joint default.

Friday, February 2, 2001, at 11:30:

Josef Zechner

Equity Valuation and Expected Default Frequencies

This paper explores the effect of alternative option models on implied expected default frequencies. In the traditional Merton model used for example by KMV default occurs at the maturity of the debt if the firm value falls below the face value of debt. In a more general framework default can occur at any point in time either because debtholders may close down the firm or because equityholders find it in their own interest to default. We show that the precise nature of the default decision is an important determinant of the resulting expected default probability.

Friday, February 2, 2001, at 13:45:

Peter Schaller

Integrating Market and Credit Risk

Application of VAR-techniques to credit portfolios and the resulting movement towards an integrated view on market and credit risk has triggered a process of mutual learning between market and credit risk management. We analyse some aspects of this process with special emphasis on the following topics:

§ Limitations of VAR

§ Liquidity and variable time horizons

§ Combining extreme events in market risk models and default events in credit risk models

Friday, February 2, 2001, at 14:55:

Michael Zerbs

Integrated Market and Credit Risk

Capturing Interrelationships Between Market Risk and Credit Risk in the Mark-to-Future Framework

§ Implementing an integrated framework for market and credit risk

§ Capturing credit risk across the institution consistently

§ Integrating stochastic exposures and credit derivatives

§ Optimizing credit risk: why mean variance approaches don't work well.

Friday, February 2, 2001, at 16:15:

Christopher C. Finger

Enhancing Monte Carlo Techniques for Economic Capital Estimation

Most models of portfolio credit risk rely on Monte Carlo simulations in order to calculate risk statistics. However, the typical parameters used in credit models (for instance, very small default probabilities) as well as the typical applications (large portfolios) and outputs (capital estimates at high levels of confidence) present particular problems for a direct Monte Carlo approach. In this talk, I will discuss some of the applications of credit models and the challenges they pose to Monte Carlo techniques. I will then present a number of approaches to dealing with these challenges. Among the topics I will cover will be simple techniques for handling large portfolios, hybrid approaches combining Monte Carlo with analytic solutions, and applications of importance sampling to mitigate simulation noise.

Friday, February 2, 2001, at 17:45:

Rainer Fuhrmann

Credit Risk - A Practitioner's Point of View

The transformation from a traditional to a state-of-the-art credit risk management function is by no means just a question of employing the right formula and technology. The presentation will describe and addresses the soft but complex issues which arise when implementing new credit rating and credit limit systems, and credit risk portfolio models to establish a modern credit risk function.

Thanks to the CRM Sponsors

The
Austrian Workshop on Credit Risk Management
is supported by the

Bank Austria

and the

Erste Bank

Registration

Registration was possible until January 20, 2001.

This registration deadline has now expired. We will still accept some additional registrations on a case-by-case basis, as long as the lecture hall size will permit.

However, we are sorry that due to space limitations we cannot accept any further participants in the Special Business Lunch on Thursday, Febr. 1. We ask any additional persons submitting the registration form for their understanding that we have to reject the participation in the Business Lunch from now on, formally justified by the expired registration deadline 20 January 2001.

Registration Fees*

	Participants from banks / credit industry / regulatory inst.	Participants from science/ universities / other NPOs	Full-time students (student ID card will be required)
Wednesday, January 31:	ATS 2,500	ATS 250	ATS 50
Thursday, February 1:	ATS 7,500	ATS 750	ATS 150
Friday, February 2:	ATS 7,500	ATS 750	ATS 150
All 3 days:	ATS 15,000	ATS 1,500	ATS 300

* 1 EUR (Euro) = 13.7603 ATS (Austrian Schilling), 1 ATS = 0.07267 EUR

Payment will be possible as bank transfer or with credit card (VISA and Master Card). The registration form is enclosed in this folder and it can be downloaded from the workshop WWW site – online registration is also possible: **http://www.fam.tuwien.ac.at/crm/**

What is included with the fees?

Participants from the credit industry, etc.: The registration fee includes coffee, drinks and snacks in the breaks between the sessions, the Conference Dinner on Thursday evening, and printed presentation material as provided by the speakers. In addition, the full registration fees (except the fee for Wednesday only) includes lunch on Thursday, when all these participants from the credit industry will have the special opportunity to meet with the speakers of this first practitioners' day during the lunch break. An additional event exclusively for these fully paying participants from the credit industry (and the media) will be organized after the end of the main program, closing the Workshop on Friday February 2: a topical address by R. Fuhrmann (IBM Austria), and a plenary discussion with other prominent participants from risk management consulting firms, software and data providers – with competent chairmen – will form the concluding highlights for the fully paying participants. Some additional "fringe benefits" for these participants paying the full fee will be announced at the workshop venue.

Participants from science/university/other NPOs: The registration fee includes coffee, drinks and snacks in the breaks between the sessions, the Conference Dinner on Thursday evening, and printed presentation material as provided by the speakers. There will be no extra "fringe benefits".

Full-time students: The registration fee includes coffee, drinks and snacks in the breaks between the sessions, and participation in the Conference Dinner (which is fully sponsored by Oesterreichische Nationalbank). Students can obtain presentation material at extra cost. Students in need of financial support should contact the organizers.

**Austrian Workshop on
Credit Risk Management
CRM 2001**

Registration Form

Last Name: …………………………………… First Name: ……………………………………

Organization: ………………………………………………………………………………………

Department: ………………………………………………………………………………………

Address: ……………………………………………………………………………………………

ZIP Code: ………………… City: ……………………………… Country: ……………………………

e-mail: ……………………………………………………………………………………………

Phone: …………………………………………… Fax: ……………………………………………

Registration fees:

	Participants from banks / credit industry / regulatory inst.	Participants from science / universities / other NPOs	Full time students (student ID card will be required)
Wednesday, January 31:	☐ ATS 2,500	☐ ATS 250	☐ ATS 50
Thursday, February 01:	☐ ATS 7,500	☐ ATS 750	☐ ATS 150
Friday, February 02:	☐ ATS 7,500	☐ ATS 750	☐ ATS 150
All 3 days:	☐ ATS 15,000	☐ ATS 1,500	☐ ATS 300

1 EUR (Euro) = 13.7603 ATS (Austrian Schilling), 1 ATS = 0.07267 EUR

Payment:

All payments should be made in ATS (Austrian Schilling) payable to CRM. Please clearly mark payment with your name and organisation. Please indicate your means of payment:

Credit card   ☐   VISA   ☐   Eurocard/Mastercard   Expiry date: ……………………………

Charge my credit card No: ……………………………………………………………………

Date: ………………………………… Signature: …………………………………………………

Bank transfer ☐   The registration fee was (or: will be) transferred on ……………………………… (date – final registration **deadline** for any bank transfer: January 20, 2001) to the bank account "Workshop on Credit Risk Management" no. 0864-50681/00 at Creditanstalt, Vienna, Austria, routing code BLZ 11000.

Conference Dinner:

☐   I will take part in the invited Conference Dinner on Thursday (February 1) evening, sponsored by **Oesterreichische Nationalbank.**

☐   I will **not** take part in this Conference Dinner.

Date: …………………………… **Signature:** ……………………………………………………

(There is a web form available at the URL given above. For the sake of security you cannot send credit card details via internet. Filling out the web form for credit card results in just another fax form sent to you via e-mail, so please use this form for cred.card!)