
The Newsletter of the EURO Working Group on Financial Modelling

NEWSFLOW

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NEWSFLOW

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Subscription is free for members of the EURO Working Group on Financial Modelling. See inside back cover for information on membership.

Invitation to readers

Readers are invited to actively contribute to the newsletter. Examples are book reviews, announcements, opinions, lists of published papers, etc.

NEWSFLOW is published twice a year (March and October) by the EURO Working Group on Financial Modelling under a grant from the Erasmus University Rotterdam. Circulation: over 400 to 33 countries.

Editorial

Avoiding Financial Disasters

Bravo! Congratulations to Jaap Spronk on the silver anniversary of the EURO Working Group on Financial Modeling that he founded, and to Otto Loistl for organizing the excellent twenty-fifth meeting to be held in Vienna November 18-20, 1999.

These are exciting, complex, dangerous and profitable times in the financial markets. There are enormous imbalances of asset prices, currency rates, and cash flows that may lead to large readjustments yielding large profits and large disasters. Risk control models such as those based on stochastic programming approaches (summarized in my edited book with John Mulvey of Princeton University, *Worldwide Asset and Liability Modeling*, Cambridge University Press, 1998) will eventually show their superiority over the mathematically flawed Value at Risk so commonly used and talked about these days.

The big advantages of these models is that

- All scenarios can be considered. This was one of the major problems that led to the fall 1998 disaster for the hedge firm Long Term Capital Management - they used simulation, VaR and historical correlations - then an unlikely but plausible scenario (all the credit spreads widened simultaneously and the correlations which were really scenario dependent converged to one) occurred; with a stochastic programming model this would have been modeled better.
- All sorts of constraints can be considered such as budget, policy, regulations, liquidity, taxes, withdrawals, etc.
- The multiperiod aspects of the problem can be modeled with discrete time models with several decision periods.
- The model simply will not allow one to overbet and will force the user to have enough cash or liquid assets to weather financial storms. Preferences are simply maximum expected long run returns net of penalty costs for constraint violations in all the periods.

True not fictitious (from models like standard mean-variance) diversification is crucial here. Long Term and other hedge funds and many banks added to their troubles here; in a recent paper I show that the size of the bets made by such institutions lead naturally mathematically with very high probability to large losses and possible bankruptcy simply because the bets are too large and the stochastic process leading to the scenario that actually occurs together produce large enough fluctuations so that eventually there is *gamblers ruin*. Bets at or above double the expected log maximizing portfolio produce the extreme disaster results. Bets above the E log portfolio levels are stochastically dominated. It is at these levels that these hedge fund/bank-trading groups that had trouble were operating.

- Markets are understandable most (95%+) of the time. However real asset prices have fat tails because extreme events occur much more than lognormal or normal distributions indicate. We use conventional financial economics models for option, bond and interest rate pricing, etc and consider that the irrational unexplainable aspects will occur once in a while. Whether or not the extreme events are predictable is not the key issue - what is crucial is that you consider that they can happen in various levels with various chances. Stochastic programming models can do this.

Despite the dangers, good trading models are leading to excellent risk adjusted profits in 1999 for those who are using good research and good risk control models leading to conservative betting levels. Let me leave this column and wish you well in Vienna with a list of 1998 financial events that were *not supposed to occur* and some 1999-2000 looming dangers.

The New York risk management consultants Capital Markets Risk list "first-time" market events - events that conventional (not stochastic programming) risk control models cannot foresee because the events have

occurrences way beyond the range of previous historical occurrences. Normally, there are four or five such events each year. 77 occurred in 1998! Here are 17 of them.

May 18	Indonesia's rupiah collapses, to 17,000 to the US dollar.
Aug 17	Russia defaults on some debt; ruble collapses.
Aug 31	The Dow plunges 512.61 points or 6.37% (on -1 day, strongest trading day of the month).
July-Sept	US banks suffer worst derivatives losses ever \$445 million.
Sept 24	Hedge fund Long-Term Capital Management is bailed out with \$3.6 billion.
Sept 27	Japan Leasing files for bankruptcy with \$17.9 billion in liabilities; biggest financial failure since World War II.
Oct 5	30-year US treasury yields hits record 4.74% low.
Oct 7	The US dollar plunges 7.8% against the yen, largest one-day loss in 12 years.
Oct 8	China's yuan soars to an all-time high of 8.2777 to the US dollar.
Oct 9:	Japan's Nikkei index sinks to 11,542, lowest since 1984.
Oct 13:	London's FTSE-100 index soars a record 214.2 points.
Nov 2	The US savings rate sinks to 0.2%
Nov. 5	Some leading Western banks cut yen deposit rates to negative values.
Nov. 11	Shares of theglobe.com skyrocket more than tenfold in first day of trading.
Nov 30	US mortgage rates fall to 6.64%, the lowest since 1967.
Dec 3	11 European countries cut interest rates simultaneously
Dec 10	World oil prices slide below \$10 a barrel, the lowest since 1986.

In 1998, 32 insurance companies in the US declared bankruptcy. Extreme events took their toll again. A good example is 1994 where California earthquake damage was 2272.71 way, way above the damage in the years 1971 to 1993 which were 17.4, 0, 0.6, 3.4, 0, 0.7, 1.5, 2.2, 9.2, 0.9, 0, 2.9, 5.0, 1.3, 9.3, 22.8, 11.5, 129, 47.0, 17.2, 12.8, and 3.2.

1999-2000 possible dangers

- The yen is too high and looking stronger - trouble in Japan and the US is on the horizon.
- The US large cap and computer stocks and especially the internet stocks are too high by traditional valuation models. The long term bond yield vs stock yield crash model I have used since publishing it in *Invest Japan*, Probus, 1991, has been in the danger zone for months. Foreign cash flows and positive sentiment are holding up the market. If they falter (weak dollar or crisis) or interest rates rise, look out.
- Hedge funds continue to overbet and get in trouble. They lost heavily on yen and gold carry trades recently and bond trading is not very successful.
- The US stock market is too high a percentage of world equity. In March I was invited to speak to Canadian Fund Managers at Lake Louise on whether the Japanese stock market (in the doldrums since 1990 at a very low 13,000 level then would rebound). My analysis pointed to a rebound. With Japan at 9.8% and the US at 51.5% in February 1999 of the world versus Japan at 9% and the US at 58% in 1960, and Japan at 44% and the US at 29% in 1988 it looked like Japan was cheap and the US expensive. At 9.8%, with Canada, historically the world's worst performing large stock market at 1.9% per person, the markets were about the same - a huge point in Japan's favor. The Nikkei now is in the 17-18,000 range and the S&P500 and Dow Jones averages little changed. I suggested currency hedging which would have gained Canadian investors 4.6% risk free in one year. That was good, but unhedged, the yen so far is way ahead of that.
- Y2K problems in developing countries may be difficult. There may be a substantial slowdown of trading and liquidity in Europe. Airlines are canceling flights around the millennium.
- Oil prices are too high.
- The gold market is now very volatile and dangerous.
- South Africa, Taiwan and Turkey are politically dangerous.

It will be exciting

William T. Ziemba

Call for papers EJOR

Thusfar, the European Journal of Operational Research has published a number of special issues on Financial Modelling:

Issue 74/2, edited by T. Martikainen, I Virtanen and P. Yli-Olli;

Issue 91/2, edited by E. Castagnoli and J. Spronk.

In 1998, the European Journal of Operational Research together with the EURO Working Group on Financial Modelling decided to start a more regular series of feature issues.

A feature issue on financial modelling is an issue of EJOR partly or wholly devoted to financial modelling. The intended frequency of these feature issues on financial modelling is once or twice per year.

Papers on financial modelling are solicited that help to solve financial-economic decision problems in practice. Papers may relate to new insights, both theoretical and empirical, into the environment in which decision makers operate, new tools available to the decision makers and to the integration of these tools within frameworks for financial-economic decision making. Papers that stimulate and strengthen the interaction between financial economic theory and the practice of financial decision making, will be especially welcome.

The first feature issue was published as Issue Volume 114, Number 2, April 16, 1999, and edited by J. Spronk. The second feature issue was edited by N. v.d. Wijst and J. Spronk and will be published soon.

Authors who want to submit to the upcoming feature issue are kindly invited to submit four copies of their paper to the Guest Editor Financial Modelling:

Nico van der Wijst
The Norwegian University of Science & Techn.
Dept. of Managerial Economics &
Techn. Management

Alfred Getz vei 1
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Fax + 47.73.593603
E-mail: Wijst@iot.ntnu.no

With respect to format and other requirements of submitted work, the authors are kindly referred to the Instructions to Authors, that can be found in every issue of EJOR. For the feature papers there is a separate board of editors, consisting of

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Constantin Zopounidis, Technical University of Crete, Greece

EURO Prize for the best applied paper

Second announcement

The EURO 2000 Conference (to be held in Budapest in July 2000) will be marked, like all EURO Conferences since 1995, by the competition for the **“EURO Prize for the best applied paper”**. All interested authors are invited to submit papers describing an application of Operational Research which has original features, whether in methodology, application or implementation.

The purposes of the competition are:

- to recognise outstanding accomplishments in the practice of Operational Research,
- to attract more application-oriented papers to EURO Conferences,
- to promote the practice of Operational Research in general.

In submitting a paper, the authors should pay attention to the following:

- it will be presented at the EURO-2000 Conference in case of selection,
- it has not been submitted concurrently to another competition,
- the jury may take whatever contacts it feels appropriate to evaluate the paper,
- in case it is selected in the short-list, the paper will be submitted to a feature issue of EJOR guest-edited by the chairman of the jury. The jury will review the various submissions and select a short-list of finalist papers,
- the fees of the authors of the finalist papers will be waived (in case of multiple authors it is understood that fees are waived for only one of the authors). These papers will be presented in one or, in exceptional cases, several “special sessions” organised by the chairman of the jury.

The winner of the Prize will be determined by the jury after the presentation of the finalist papers in the special session. The winner of the Prize will be announced by the chairman of the jury during the closing session. The winner of the Prize will give a brief presentation (15 minutes) of the paper. The EURO Prize for the best applied paper should be considered as a considerable honour. The Prize in itself will consist of:

- an ad-hoc certificate and medal,
- the exemption of fees for the next three EURO Conferences (in case of multiple authors, it is understood that there will be only three exemptions).

The schedule for the EURO 2000 Conference is as follows

- 30 November 1999: Deadline for the submission of papers.
- December 1999 - March 2000: Jury examines submissions.
- April 2000: Jury announces the finalists papers. Referees are selected for the finalist papers. Composition of the special sessions transmitted to the Programme and Organising Committees. Special sessions are widely publicised in the Final programme.
- July 2000: Special sessions organised by the chairman with the finalist papers. Winner of the Prize announced during the closing session. Winning paper is briefly presented during the closing session.

All papers must be submitted in paper form as well as in electronic form (Word 6.0/95) attachment to an email to the Chairman of the Jury Professor Costas P.Pappis at the following address:

University of Piraeus
Dept.of Industrial Management
80 Karaoli & Dimitriou Str.
18534 Piraeus
Greece
Tel. (+301) 4222060, 4120751/ext.316
Fax (+301) 4179064
Email: pappis@unipi.gr

26th EWG Meeting

The 26th meeting will be held in Trondheim, Norway, from May 4-6, 2000.

This meeting will be organized by:

Dr. Nico van der Wijst

For further information please contact him at:

**The Norwegian University of
Science and Technology
Dept. of Managerial Economics & Techn. Man.
Alfred Getz vei 1
N-7034 Trondheim
Tel: +47-73-597712
Fax: +47-73-593603
Email: Wijst@iot.ntnu.no**

Vienna 18-20 November 1999

Program and Abstracts

The Final Program as well as the abstracts of this meeting can be found on the internet site:

<http://ifm.wu-wien.ac.at/euro25/>

Information

This meeting is organized by:

Prof.dr. Otto Loistl

For further information please contact him at:

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Email: otto.loistl@isis.wu-wien.ac.at**

More information is also available on the internet site of this meeting:

<http://ifm.wu-wien.ac.at/euro25/>

Next meeting(s)

The Autumn 2000 meeting will be organised in New York, by Anoop Rai.

The Spring meeting in 2001 will be organised in Vilnius (Lithuania) by Leonidas Sakalauskas.

The Autumn meeting in 2001 will probably be organised in Bath (UK) by Christopher Adcock.

There is an offer to organise the Spring 2002 meeting in Capri, by Maria Simonelli.

Offers to organise the Autumn meeting in 2002 are welcome.

New book(s)

Current Topics in Quantitative Finance
(Contributions to management science)
Editor: Elio Canestrelli

Abstract:

The volume collects a selection of papers of the 21st EURO Working Group on Financial Modelling. The papers in this book provide a representative, though not complete sample of the current scientific activity in the field of quantitative finance. Such activity is not only theoretical but also practical, because it tries to combine theoretic analyses with empirical evidence. The topics deal with corporate finance, asset price analysis, portfolio management, decision theory, international exchange markets and financial derivatives. It is important to note the presence of algorithms, methods and models, helpful in the real activity of a decision maker, as performance evaluations and scenarios identifications in portfolio models, how to measure bank efficiency, and how to realize an efficient diversification of international investments.

Working Papers

From the *Rotterdam Institute for Business Economic Studies* (RIBES), Erasmus University Rotterdam, Room H15-28, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands, the following papers can be ordered:

- | | | | |
|--------|---|----------|--|
| 9401/F | Hallerbach, W.G., Duration and bond return approximation, The quaso-convexity effect, January 1994. | 9606/F | Greco S, The splitting property of fuzzy financial laws, September 1996. |
| 9405/F | Smit, J.T.J., The flexibility value of strategic investments under competition, March 1994. | 9612/F | Post, T. and J. Spronk, Interactive data envelopment analysis, September 1996. |
| 9414/F | Spronk, Jaap and Erik M. Vermeulen, Interfirm performance evaluation under uncertainty: A multi-dimensional framework, September 1994. | 9615/O/F | Bruining, J., A.C.C. Herst and D. Citron, Loan convenience relationship banking and MBO's in default: a comparative study of the UK and Holland. |
| 9422/F | Brouwer, Frank, Paul C. van Aalst and Nico L. van der Sar, Investment risk and risk management revisited, November 1994. | 9616/F | Soppe, A.B.M., De rol van rente, geld en vermogen in het wereld economisch proces: een ethische beschouwing. |
| 9426/F | Hallerbach, Winfried G., A simple approximation to the normal distribution function with an application to the Black & Scholes option pricing model, December 1994. | 9707/F | Post, Th. and J. Spronk, Bank performance bench-marking in stochastic environments using log-linear mean-variance data envelopment analysis. |
| 9502/F | Higson, Chris and Jamie Elliott, Post-takeovers returns - The UK evidence, March 1995. | 9711/F | Groenendijk, A.A. and J. Spronk, Portfolio performance through the eyes of monkeys. |
| 9503/F | Groenendijk, A.A. and E.E. Hagen, Solving the capital structure puzzle: The government as a stakeholder in the firm, March 1995. | 9713/F | Spronk, J. and E.M. Vermeulen, Interfirm performance evaluation under uncertainty. |
| 9504/F | Vermeulen, Erik M., Jaap Spronk and Nico van der Wijst, Analysing risk and performance using the multi-factor concept, april 1995. | 9719/F | Meulen, J. van der and J. van der Voort, Er valt wat te zeggen voor passief beleggen. |
| 9505/F | Vermeulen, Erik M., Jaap Spronk and Nico van der Wijst, A Framework for conditional failure prediction, April 1995. | 9721 | Post, G.T., Transconcave Data Envelopment Analysis |
| 9508/F | Brännback, M. and J. Spronk, A multidimensional framework for strategic decisions, June 1995 | 9822 | Kouwenberg, R., Dynamic Portfolio Insurance: A Stochastic Programming Approach |
| 9509/F | Hallerbach, W.G. and J.Spronk, Portfolio management for the non-average investor, June 1995. | 9824 | Soppe, A., Capital, Interest and Ethics: Some Empirical Explorations of an Ethical Approach of economic growth |
| 9520/F | Soppe A., De duurzaamheid van het internationale geld en bankstelsel: Een ethische beschouwing, September 1995. | 9847 | Post, G.T., Estimating non-convex production sets using transconcave DEA |
| 9526/F | Groenendijk, A.A., Investeren, kasstroomprojectie en ondernemingswaarde, December 1995. | 9905 | Post, G.T., Nonparametric efficiency estimation in stochastic environments |
| | | 9911 | Kuosmanen, T. and G.T. Post, Robust Efficiency Measurement. Dealing with outliers in Data Envelopment Analysis |
| | | 9913 | Hallerbach, W.G. and J. Spronk, A Multicriteria Framework for Risk Analysis |
| | | 9922 | Spronk, J. and W.G. Hallerbach, Het "redelijk rendement" voor ondernemingsactiviteiten vanuit financieel-economisch perspectief |

Working Papers

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| 9801 | Roy Kouwenberg, A stochastic programming model for asset liability management for pension funds. | 9903 | Philip Hans Franses and Patrick J.F. Groenen, Visualizing time-varying correlations across stock markets. |
| 9802 | Dick van Dijk, Philip Hans Franses and André Lucas, Short patches of outliers, ARCH and volatility modeling. | 9904 | Pauline Bod, David Blitz, Philip Hans Franses and Roy Kluitman, An unbiased variance estimator for overlapping returns. |
| 9803 | Philip Hans Franses and Richard Paap, Modeling day-of-the-week seasonality in the S&P 500 index. | 9905 | Martin Martens and Ser-Huang Poon, Correlation dynamics between international stock markets using synchronous data. |
| 9804 | Jenke ter Horst, Theo Nijman and Frans de Roon, Style analysis and performance evaluation of Dutch mutual funds. | 9906 | Jaap Hoek, Patrick Houweling and Frank Kleibergen, The joint estimation of term structures and credit spreads. |
| 9805 | Jenke ter Horst, Theo Nijman and Frans de Roon, Performance analysis of international mutual funds incorporating market frictions. | 9907 | Winfried Hallerbach and Bert Menkveld, Value at risk as a diagnostic tool for corporates: the airline industry. |
| 9806 | Monique Donders, Roy Kouwenberg and Ton Vorst, Options and earnings announcements: an empirical study of volatility, trading volume, open interest and liquidity. | 9908 | Ser-Huang Poon and Peter F. Pope, Tests of option market efficiency: a high frequency data and common volatility component approach. |
| 9807 | Bert Menkveld and Ton Vorst, A pricing model for American options with stochastic interest rates. | 9909 | Jacek Gondzio, Roy Kouwenberg and Ton Vorst, Hedging options under transaction costs and stochastic volatility. |
| 9808 | Jon Danielsson, Philip Hartmann and Casper de Vries, The cost of conservatism: extreme returns, value-at-risk, and the Basle multiplication factor. | 9910 | Jon Danielsson, Bjorn N. Jorgensen and Casper G. de Vries, VoF or VAR? Firm Value and Risk Management. |
| 9809 | Antoon Pelsser and Ton Vorst, Pricing of flexible and limit caps. | | |
| 9810 | Phil Hunt, Joanne Kennedy and Antoon Pelsser, Markov-functional interest rate models. | | |
| 9811 | Antoon Pelsser, Pricing double barrier options using analytical inversion of Laplace transforms. | | |
| 9812 | Phil Hunt and Antoon Pelsser, Arbitrage-free pricing of quan-to-swaptions | | |
| 9813 | Roy Kouwenberg, Dynamic portfolio insurance: a stochastic programming approach. | | |
| 9901 | Dick van Dijk, Philip Hans Franses, André Lucas and Nick Taylor, SETS, arbitrage activity, and stock price dynamics. | | |
| 9902 | Jan Annaert and Marc J.K. de Ceuster, The big mac: more than a junk asset allocator? | | |

EURO Working Group on Financial Modelling

The EURO Working Group on Financial Modelling was founded in September 1986 in Lisbon. The primary field of interest for the Working Group can be described as “financial models that help to solve problems faced by financial decision makers in the firm, intermediaries and the investment community”. From this the following objectives of the Working Group are distinguished:

- providing an international forum for exchange of information and experience on financial modelling;
- encouraging research in financial modelling (new techniques, methodologies, empirical studies, software, etc.);
- stimulating and strengthening the interaction between financial economic theory and the practice of financial decision making;
- cooperating and exchanging information with other universities and financial institutions throughout Europe.

It can be stated safely that the Working Group has become an established one. To give an idea: over 300 members, 25 international meetings and an own newsletter (*NEWSFLOW*) are three examples of the success until now.

Meetings

The meetings of the Working Group are organized twice a year, in April/May and in October/November. Earlier meetings were held in Belgium, Curaçao, Cyprus, Finland, France, Hungary, Italy, the Netherlands, United Kingdom, Germany, Greece, Croatia, Poland and Spain. There are now members in 34 countries spread over 4 continents. The meetings are attended by 80-100 members on average, most of them scientists but also representatives from the financial institutions, and are usually organized on Thursday, Friday and Saturday morning. The organizers are expected to schedule three types of sessions: a round table session with invited speaker(s), regular sessions with the presentation of refereed papers and balloon sessions in which unrefereed papers, new topics and ‘loose’ ideas can be discussed.

Newsletter

NEWSFLOW, the newsletter of the Working Group is published twice a year, about one month before each meeting. It contains general information about the Working Group and the next meeting(s), abstracts of the papers of the next meeting, letters from readers, announcements of financial seminars, calls for papers, a list of working papers, etc. For information about *NEWSFLOW* or for publication of your contributions please contact the editor: H  l  ne Molenaar, address below. You can find the latest edition of *NEWSFLOW* on the internet page:

<http://www.eur.nl/few/finbel/htmls/finFLOW.html>

Membership

For information about membership of the EURO Working Group on Financial Modelling, you may write to:

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