Rmetrics

Financial Engineering and Computational Finance

A Practitioner's Course for R and SPlus Programmers

June 14th, 2006, 14:00-17:30, Wirtschaftsuniversität Wien, *useR!* Tutorial

A 3h Tutorial presented by Diethelm Würtz
Institute for Theoretical Physics, ETH Zürich

Rmetrics is the premier open source solution for financial market analysis and valuation of financial instruments. With hundreds of functions build on modern and powerful methods Rmetrics combines explorative data analysis and statistical modeling with object oriented rapid prototyping. Rmetrics is embedded in R, both building an environment which creates especially for students and researchers in the third world a first class system for applications in statistics and finance. Rmetrics allows you to study all the source code, so you can find out precisely which variation of the algorithm or method has been implemented. This let's you understand what the source code does. Thus Rmetrics can be considered as a unique platform ideally suited for teaching financial engineering and computational finance.

Rmetrics Overview - Hundreds of Functions …

About 40 Minutes

fBasics, fCalendar, fSeries, fMultivar, fExtremes,
fCopulae, fTickdata, fPortfolio, fBonds

Selected Topics - Use State of the Art Algorithms …

Each Topic takes about 20 Minutes (100 Minutes)

timeDate and timeSeries Objects
Garch Time Series Modelling
Dependence Structures and Copulae
Exponential Brownian Motion: Asian Options
Yield Curve Modelling

Rmetrics' Graphical User Interface - Work interactively …

About 20 Minutes

fBrowser GUI

Rmetrics Programming - Write functions by your own …

About 20 Minutes

Rmetrics Naming and Coding Conventions
Rmetrics and SPlus Compatibility
Rmetrics miniChapters for Splus

References:

1. Homepage of Rmetrics: www.rmetrics.org
2. Diethelm Würtz, Rmetrics - *Financial Engineering and Computational Finance*, A Practitioner's Guide for R and SPlus Programmers, A Monograph, forthcoming Spring 2007, about 850 pages

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This course is intended as a brief overview of *Financial Engineering and Computational Finance* using *R* and *Rmetrics*. The course is aimed primarily at the wide audience of individuals who work, teach, do research or study in the areas of quantitative finance and financial econometrics. The content is appropriate for anyone who analyzes or models financial market data.

The methods presented are rather general, examples are drawn from financial market analysis. Thus, practitioners in the finance industry who already use *R* or *SPlus* and want to explore more advanced financial applications of advanced analytics will find this class useful. It is also appropriate for financial analysts who may not be familiar with *R* and *Rmetrics* but who desire an integrated and open statistical modeling and programming environment for the analysis of financial data.

The course is presented by PD Dr. Diethelm Würtz from ETH Zürich. He teaches courses at ETHZ in *Econophysics* and is the developper of the *Rmetrics* software environment.