Conference Report: R/Finance 2013

by Joshua Ulrich

The fifth annual R/Finance conference for applied finance using R was held in Chicago, IL, USA on Friday May 17 and Saturday May 18, 2013.

The conference provided a venue to discuss how R can be used for portfolio management, time series analysis, advanced risk analysis, high-performance computing, market microstructure, and econometrics. As in prior years, the conference had 300 attendees from several countries (including several European countries, South Africa, Australia, and Russia). The program included seminars, keynotes, full-length talks, and lightning talks. The conference also provided exceptional networking opportunities.

Presentations

Five one-hour, single-track seminars were held on Friday morning:

- Whit Armstrong, Bryan Lewis: An Introduction to Distributed Computing in R
- Matthew Dowle: Advanced Tutorial on **data.table**
- Jan Humme, Brian Peterson: Using **quantstrat** to evaluate intraday trading strategies
- Dirk Eddelbuettel: Example-driven Introduction to **Rcpp**
- Jeffrey Ryan: R Programming for Financial Data

The first presentation was by keynote Ryan Sheftel, who talked about how he uses R on his bond trading desk. David Ardia showed how expected returns can be estimated via the covariance matrix. Ronald Hochreiter gave an overview of modeling optimization via his **modopt** package. Bernhard Pfaff used Bayesian utility optimization to allocate large portfolios.

Maria Belianina showed how R can interface with OneTick's high performance time series database. Yang Lu described Brinson-style portfolio attribution using **pa**. Michael Kapler used factor clusters to construct Risk Parity portfolios and evaluate risk contributions. Tammer Kamel gave a live demo of the **Quandl** package and said, "Quandl hopes to do to Bloomberg what Wikipedia did to Britannica."

Doug Martin talked about robust covariance estimation. Giles Heywood discussed several ways of estimating and forecasting covariance, and proposed an "open source equity risk and backtest system" as a means of matching talent with capital.

Ruey Tsay was the next keynote, and spoke about using principal volatility components to simplify multivariate volatility modeling. Alexios Ghalanos spoke about modeling multivariate time-varying skewness and kurtosis.

Kris Boudt examined changes in portfolio properties across volatility regimes. David Matteson described a new technique for detecting change points in any statistical property of univariate and multivariate time series. Celine Sun proposed a methodology to construct a full-rank covariance matrix using cross-sectional volatilities. Winston Chang gave a live demo of **shiny**.

Saturday started with Christian Silva, who evaluated statistical properties of moving-average-based strategies to determine when they do and don't work. He provided code at `http://rpubs.com/silvaac/6165`. Vyacheslav Arbuzov used a cluster of servers to analyze financial bubbles and crashes using an agent-based model. Stephen Rush examined the relationship between bond coupon and liquidity in different market regimes.

Samantha Azzarello discussed her work with Blu Putnam, which used a dynamic linear model to evaluate the Fed's performance vis-a-vis the Taylor Rule. Grant Cavanaugh examined the success of new ETF product listings. Jiahan Li used constrained least squares

on 4 economic fundamentals to forecast foreign exchange rates. Thomas Harte talked about regulatory requirements of foreign exchange pricing; basically documentation is important, Sweave to the rescue!

Sanjiv Das gave a keynote on 4 applications: 1) network analysis on SEC and FDIC filings to determine banks that pose systematic risk, 2) determining which home mortgage modification is optimal, 3) portfolio optimization with mental accounting, 4) venture capital communities.

Dirk Eddelbuettel showed how it's easy to write fast linear algebra code with **RcppArmadillo**. Klaus Spanderen showed how to use QuantLib from R, and even how to to call C++ from R from C++. Bryan Lewis talked about SciDB and the **scidb** package (SciDB contains fast linear algebra routines that operate on the database!).

Matthew Dowle gave an introduction to **data.table**. Chris Blakely showed a Java interface to R and a C implementation of the HEAVY realized volatility model. Mathieu Lestel described his 2012 Google Summer of Code project that added functionality to **PerformanceAnalytics**.

Attilio Meucci gave his keynote on visualizing advanced risk management and portfolio optimization. Immediately following, Brian Peterson gave a lightning on implementing Meucci's work in R (Attilio works in Matlab), which was part of a Google Summer of Code project last year.

Thomas Hanson presented his work with Don Chance (and others) on computational issues in estimating the volatility smile. Kam Hamidieh used options prices to recover the underlying asset's probability distribution estimate. Jeffrey Ryan showed how to manipulate options data in R with the **greeks** package.

Prizes

The conference wrapped up by giving away three books, generously donated by Springer, to three random people who submitted feedback surveys. The committee also presented the awards for best papers. The winners were:

- Regime switches in volatility and correlation of financial institutions, Boudt et. al.
- A Bayesian interpretation of the Federal Reserve's dual mandate and the Taylor Rule, Putnam & Azzarello
- Nonparametric Estimation of Stationarity and Change Points in Finance, Matteson et. al.
- Estimating High Dimensional Covariance Matrix Using a Factor Model, Sun (best student paper)

Networking

The two-hour conference reception at UIC on Friday was a great time to talk with speakers, and mingle with other attendees. Next was the (optional) dinner at The Terrace at Trump. Unfortunately, it was cold and windy, so we only spent 15-20 minutes on the terrace before moving inside. The food was fantastic, but the conversations were even better. After the final presentation on Saturday, many attendees continued conversations over food and drink at Jaks Tap.

Sponsors and organizers

The conference could not be successful without the support of our fantastic sponsors: International Center for Futures and Derivatives at UIC (our host), Revolution Analytics,

MS-Computational Finance at University of Washington, Google, lemnica, OpenGamma, OneMarketData, and RStudio.

Thanks to the committee: Gib Bassett, Peter Carl, Dirk Eddelbuettel, Brian Peterson, Dale Rosenthal, Jeffrey Ryan, Joshua Ulrich; and also to the event coordinators: Holly Griffin and Alexandrina Almazan.

Further information

The R/Finance website, http://www.RinFinance.com, contains information for past and future conferences. Slides (if made available by the authors) can be downloaded via the agenda page. We hope to see you in May 2014!

On Behalf of the Conference Committee,

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