Finanzökonometrisches Seminar

Seminar für Finanzökonometrie

20. October 2016

Learning targets (1/3)

Concerning Statistics

- To become aquainted with a specific research topic
- The handling of literature
- To recreate complex methods (e.g. programming, data analysis in Matlab/R)
- ...

Learning targets (2/3)

Concerning working techniques

- Seminar Paper
  - To structure a report of a complex topic
  - The correct reproduction of a topic in own words
  - To write a scientific text
  - ...
- Slides
  - To extract the main results of a seminar paper
  - To structure and visualize a complex topic
  - ...
- The Presentation
  - To speak in front of a group of people
  - To practice oral presentation skills
  - ...
- Other skills
  - To work independently
  - Time management

Learning Targets (3/3)

The Präpadeutikum

- Slides on the homepage:
  `http://www.statistik.lmu.de/institut/ag/agmg/lehre/2016_WiSe/Propaedeutikum/index.html`

Tasks

What you have to do:

- Writing a seminar paper
- Preparing slides
- Giving a presentation
- Attendance

The Requirements (1/2)

The Seminar Paper

- About 50.000 characters
- It should include: Title page, table of contents, main part, summary, appendix, list of used literature
- Labeling of all plots and tables
- If you use software, explain which packages and functions you used
- ...

The Requirements (2/2)

The Slides

- Consistent with the seminar paper concerning structure, content, examples, etc.
- Do not overfill
- Summarize main results in key points
- ...

The Presentation

- Duration: about 45 minutes
- Plan to need about 2-3 minutes per slide
- Give an overview in the beginning
- Summarize main results in the end
- ...

Modus Operandi

- The topics and additional organizational matters will be addressed in the preparatory meeting at 04:00 pm s.t. on October 20 at Seminarraum (Ludwigstr. 33/I).
- Every student must pick three topics, list them in a preferential ordering (highest to lowest), and send this list no later than noon of October 27 to Christoph.Berninger@stat.uni-muenchen.de
- The organizers will assign topics according to (highest) preferences (if possible) or by lottery. Students will be informed about the outcome of this assignment process on October 27.
- Every student is required to meet with the responsible advisor within the first two weeks after the assignment process is completed.
- Seminar paper submission no later than noon January 10. No exceptions granted!

Compulsory attendance times

- preparatory meeting
- two additional meetings, tba
- final meeting with presentations (January 20 from 9:00 - 18:00)

Topic 1: Realized Volatility & The HARQ-Model

Literature

- Main Literature
  - Bollerslev, Tim, Andrew J. Patton, and Rogier Quaedvlieg. “Exploiting the errors: A simple approach for improved volatility forecasting“. Journal of Econometrics 192.1 (2016): 1-18.
- Further Literature
  - McAleer & Medeiros (2008): “Realized Volatility: A Review“. Econometric Reviews 27, pp. 10–45.
  - Andersen, Torben G., and Timo Teräsvirta. “Realized volatility“. Handbook of Financial Time Series. Springer Berlin Heidelberg, 2009. 555-575.

Topic 2: Local Gaussian Correlation

Literature

- Main Literature
  - Berentsen, G. D., T. S. Kleppe, and D. B. Tjøstheim (2014a), "Introducing localgauss, an R Package for Estimating and Visualizing Local Gaussian Correlation", Journal of Statistical Software 56(12).
- Further Literature
  - Tjøstheim, D. B. and K. O. Hufthammer (2013), "Local Gaussian correlation: A new measure of dependence", Journal of Econometrics 172(1), pp. 33–48.
  - Ang, Andrew, and Joseph Chen. "Asymmetric correlations of equity portfolios". Journal of financial Economics 63.3 (2002): 443-494.

Topic 3: Using Bootstrapping and Filtered Historical Simulation to Evaluate Market Risk

Literature

- Based on Matlab demo: http://de.mathworks.com/help/econ/examples/using-bootstrapping-and-filtered-historical-simulation-to-evaluate-market-risk.html

Topic 4: Modelling The Yield Curve

Literature

- D. Brigo & F. Mercurio (2001) “Interest Rate Models - Theory and Practice“. Springer finance (Springer). Available at http://books.google.de/books?id=nmmAZLwtQywC.
- F. X. Diebold & C. Li (October 2003) “Forecasting the Term Structure of Government Bond Yields“. Working paper series (National Bureau of Economic Research). Available at http://www.nber.org/papers/w10048

Topic 5: Calibration of the Hull-White Modell

Literature

- D. Brigo & F. Mercurio (2001) “Interest Rate Models - Theory and Practice“. Springer finance (Springer). Available at http://books.google.de/books?id=nmmAZLwtQywC.
- Herr, Hans O. “Implizite Finanzoptionen: Abschlussbericht zur Methodik der Bewertung von impliziten Finanzoptionen in Lebensversicherungsprodukten Themenfeld Produktanalysen und Bewertungen Ausschuss für Finanzmathematik der DVA. Vol. 32. Verlag Versicherungswirtsch., 2004.

Topic 6: Implied Correlation Indices

Literature

- Geppert, S. and Fink, H.: “Implied correlation indices and volatility forecasting“. Applied Economics Letters, to appear, 2016.
- Chigaco Board of Options Exchange: CBOE S&P 500 Implied Correlation Index. White Paper, 2009.

Topic 7: Pricing Quanto Commodity Options

Literature

- Fink, H. and Mittnik, S.: “Quanto pricing models beyond Black-Scholes“. Center for Quantitative Risk Analysis (CEQURA), Working Paper Number 16, 2016.
- Kim, Y. S., Lee, J., Mittnik, S. and Park, J.: “Quanto Option Pricing in the Presence of Fat Tails and Asymmetric Dependence“, Journal of Econometrics 187: 512–520, 2015.

Topic 8: Variance Targeting Estimation (VTE) for GARCH models

Literature

- Intro to GARCH:
  - Timo Teräsvirta (2009). “An Introduction to Univariate GARCH Models“. In: Handbook of Financial Time Series. Ed. by Thomas Mikosch et al., Springer Berlin Heidelberg, pp. 17-42. isbn: 978-3-540-71297-8.
  - Alexander M. Lindner (2009). “Stationarity, Mixing, Distributional Properties and Moments of GARCH(p, q) Processes“. In: Handbook of Financial Time Series. Ed. by Thomas Mikosch et al., Springer Berlin Heidelberg, pp. 43-69. isbn: 978-3-540-71297-8.
- Main literature:
  - Christian Francq, Lajos Horváth, & Jean-Michel Zakoïan (2011).“ Merits and Drawbacks of Variance Targeting in GARCH Models“. Journal of Financial Econometrics 9(4), pp. 619-656.

Topic 9: Temporal Aggregation of GARCH Processes

Literature

- Intro to GARCH:
  - Timo Teräsvirta (2009). “An Introduction to Univariate GARCH Models“. In: Handbook of Financial Time Series. Ed. by Thomas Mikosch et al., Springer Berlin Heidelberg, pp. 17-42. isbn: 978-3-540-71297-8.
  - Alexander M. Lindner (2009). “Stationarity, Mixing, Distributional Properties and Moments of GARCH(p, q) Processes“. In: Handbook of Financial Time Series. Ed. by Thomas Mikosch et al., Springer Berlin Heidelberg, pp. 43-69. isbn: 978-3-540-71297-8.
- Main literature:
  - Feike C. Drost, & Theo E. Nijman (1993). Temporal Aggregation of Garch Processes. Econometrica 61(4), pp. 909-927.
  - Chapter 4 of Andrea Silvestrini & David Veredas (2008). Temporal Aggregation of Univariate and Multivariate Time Series Models: A Survey. Journal of Economic Surveys 22(3), pp. 458-497.

Topic 10: Currency Hedging For International Portfolios

Literature

- Perold, André F., and Evan C. Schulman. “The Free Lunch in Currency Hedging: Implications for Investment Policy and Peformance Standards.“ Financial Analysts Journal 44.3 (1988): 45-50.
- Schmittmann, Jochen M. “Currency hedging for international portfolios.“ No. 10-151. International Monetary Fund, 2010.
- Video: [MSCI Webinar: Currency Hedging: Adapting to Volatility](https://www.msci.com/www/event/msci-webinar-currency-hedging/0374851272)

Topic 11: Modeling Macroeconomic Time Series

Literature

- Lütkepohl, Helmut. “New introduction to multiple time series analysis.“ Springer Science & Business Media, 2005.
- Hamilton, James Douglas. “Time series analysis.“ Vol. 2. Princeton: Princeton university press, 1994.
- Video: [Using MATLAB to Develop Macroeconomic Models]`http://de.mathworks.com/videos/using-matlab-to-develop-macroeconomic-models-81662.html`
- MATLAB Code: [File Exchange]`https://de.mathworks.com/matlabcentral/fileexchange/25871-using-matlab-to-develop-macroeconomic-models`

Topic 12: Estimating and Backtesting Value-at-Risks (VaRs)

Literature

- Christoffersen, P. F. (1998), “Evaluating interval forecasts“, International Economic Review 39(4), pp. 841–862.
- Kuester, K., S. Mittnik, and M. S. Paolella (2006), “Value-at-Risk Prediction: A Comparison of Alternative Strategies”, Journal of Financial Econometrics 4(1), pp. 53–89.
- Ruppert, D. (2011a), “Statistics and data analysis for financial engineering“, Springer texts in statistics, New York [u.a.]: Springer, Chapter 19, pp. 505–529.

Topic 13: Introduction to Copulas

Literature

- Ruppert, D. (2011b), “Statistics and data analysis for financial engineering“, Springer texts in statistics, New York [u.a.]: Springer, Chapter 8, pp. 175–200.
- Remillard, B. (2013), “Statistical methods for financial engineerin“g, Boca Raton, Fl.: CRC Press, Chapter 8, pp. 257–343.
- Fisher, N. I. (2004), “Copulas”, Encyclopedia of Statistical Sciences, John Wiley & Sons, Inc.