Financial Econometrics
FALL 2014

DRAFT SYLLABUS

Financial Econometrics
Fall 2014
Tuesday: 3:00 to 5:50 pm

Professor Robert F. Engle
FINC-GB.4388.01
KMC 9-191, Gruber Conference Room

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Fax: 212-995-4220

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Course Description: The course is designed to introduce the econometric tools most used in finance and to gain understanding of the sources and characteristics of financial data as well as current and classic applications.

Each week there will be a Paper of the Week. Each student will bring to class a page with two observations on the paper. Each should only be a few lines. To help prepare, two students will present the paper to the rest of the class at a Friday lab. The Friday lab will also teach computational skills needed for the upcoming homework assignments.

We will use Datastream, WRDS, CRSP, Yahoo Finance, or other vendors as a source for financial data, and EViews software to build ARCH and other time series models. There will be 3 homework assignments including a short research paper. The homework assignments will include computer exercises which will be developed in Friday lab and then presented in class. EViews is available in the computer lab and on CITRIX, but I recommend that you buy a copy or upgrade to the latest version which has ARCH software as well as GMM, cointegration and lots of available algorithms.

There will be a two part final exam. There will be a closed book short answer in-class exam and then a more research oriented take home part.

This course presumes familiarity with finance as well as a course in graduate econometrics. Ideal preparation is Econometrics I and Finance Theory I.

Time: Tuesday 3:00-5:50 pm

Office Hours: Monday 3:00–5:00 pm or by appointment

Laboratory: Friday 11:00 am-12:00 pm, KMC 4-90

GRADING:
40% Homework
25% Short Answer Exam
25% Take Home Exam
10% Classroom Participation
<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1.</td>
<td>9/2</td>
<td>Volatility: Data, Models, Risk</td>
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<td>• Homework 1 Assigned: VLAB, EViews, GARCH Models</td>
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<td>• Paper of the Week: “What Good is a Volatility Model”, Engle and Patton, 2001</td>
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<td>2.</td>
<td>9/9</td>
<td>Econometrics of Volatility: MLE, QMLE, and Stochastic Processes</td>
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<td>3.</td>
<td>9/16</td>
<td>Economics of Volatility: Asset Pricing and Spline GARCH</td>
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<td>• Paper of the Week: “Expected Stock Returns and Volatility”, French Schwert Stambaugh</td>
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<td>4.</td>
<td>9/22</td>
<td>Homework 1 Due: Submit assignment on course website by 11:55 PM</td>
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<td>5.</td>
<td>9/23</td>
<td>Realized Volatility: Measures and Forecasts, the Multiplicative Error Model</td>
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<td>• Paper of the Week: “Modeling and Forecasting Realized Volatility”, Andersen, Bollerslev, Diebold, Labys, 2003</td>
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<td>• Homework 1 Due: Bring hard copy to class</td>
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<td>6.</td>
<td>9/30</td>
<td>No Class</td>
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<td>7.</td>
<td>10/7</td>
<td>Microstructure Data and Models with irregularly spaced data</td>
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<td>• Homework 2 Assigned: Asymmetric Volatility</td>
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<td>8.</td>
<td>10/14</td>
<td>Options and Implied Volatility</td>
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<td>• Paper of the Week: “Crash-O-Phobia: A Domestic Fear or a Worldwide Concern?”, Foresi, Wu 2005</td>
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<td>9.</td>
<td>10/20</td>
<td>Homework 2 Due: Submit assignment on course website by 11:55 PM</td>
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<td>10.</td>
<td>10/21</td>
<td>Extreme Value Distribution and Quantile Estimation</td>
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<td>• Homework 2 Due: Bring hard copy to class</td>
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<td>11.</td>
<td>10/28</td>
<td>Copula and Tail Dependence</td>
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<td>• Homework 3: Short Research Paper Assigned</td>
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<td>• Paper of the Week: “Modelling Dependence in High Dimensions with Factor Copulas”, Patton and Oh, 2012</td>
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<td>12.</td>
<td>11/4</td>
<td>Dynamic Conditional Correlation and Multivariate GARCH</td>
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<td>• Paper of the Week: “International Stock Return Comovements”, Bekaert Hodrick and Zhang, 2009</td>
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13. **11/7**  **(Make-up Class, 1:30 – 4:20 pm)** DECO and Factor Spline GARCH
   • Paper of the Week: “Factor Spline Garch Model for High and Low Frequency Correlations”, Rangel and Engle, 2012

14. **11/11**  Asset Pricing, Fama and French, Bali and Engle, Llewellen and Nagel

15. **11/18**  Systemic Risk, CoVaR, MES and Stress Tests
   • Homework 3 Research Paper Due

16. **11/25**  No Class

17. **12/2**  In class: **Short Answer Exam**
   • Take home exam begins

18. **12/4**  **Take Home Exam Due**
REFERENCES

BOOKS


JOURNAL ARTICLES


43. Foresi, Silverio and Liuren Wu (2005), “Crash-O-Phobia: A Domestic Fear or a Worldwide Concern?” *Journal of Derivatives*, pp8-21


46. Ishida and Engle (2004), “Modeling the Variance of Variance: The Square Root, the Affine and the CEV-GARCH Models”, manuscript


50. Patton, Andrew and Dong Hwan Oh (2012), “Modelling Dependence in High Dimensions with Factor Copulas” (December 6, 2012)
