Course webpage: Accessible through the HKU portal page (username and passcode required)

COURSE INFORMATION:

Prerequisites: Solid training in Applied Econometrics or equivalent is assumed. Previous training in basic programming skills are preferred.

Course Overview: Financial econometrics is the intersection of statistical techniques and finance. Financial econometrics provides a set of tools that are useful for modeling financial data and testing beliefs about how markets work and prices are formed. Conversely, new techniques in analyzing financial data can lead to empirical facts inconsistent with existing theories, begging for new models or investment strategies. We focus on several empirical techniques which are often used in the analysis of financial markets and how they are applied to actual data.

Course Objectives:

1. To provide an introduction to financial econometrics.
2. To develop the ability to conduct elementary empirical analysis of financial data.

Textbook: We do not rely on any single textbook. The followings are our major references.


Computational Software: For empirical work, we often need to write programme code and run the programme code using batch mode. Students are required to use R, a free and popular computing language (similar to Matlab and S-Plus). R is available at our computer lab at KKL 1009, and may be downloaded from http://www.r-project.org/ . Many researchers have developed R packages for financial analysis. Sample scripts will be provided in due course to lower the cost of learning the software.

Typesetting Software: In preparing for reports on empirical work, we often include equations, mathematical symbols and plots. Microsoft Words is a clumsy software to do this job. Fortunately, a free typesetting software LyX is available, and may be downloaded from http://www.lyx.org/Download. It is highly recommended, but not required.

INTENDED LEARNING OUTCOMES

On completion of this course, students should be able to:

CILO1. Collect data, select the appropriate econometric technique to test financial models and estimate financial relationship, and write a short report based on the results.

CILO2. Understand and evaluate basic empirical results of research reports.
### ALIGNMENTS OF PROGRAM AND COURSE LEARNING GOALS:

<table>
<thead>
<tr>
<th>Program Intended Learning Goals</th>
<th>Course ILOs</th>
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<tbody>
<tr>
<td>PLO1. Understanding of fundamental theories and new development in economics</td>
<td>CILO1, CILO2</td>
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<tr>
<td>PLO2. Mastering of skills in analyzing economic data</td>
<td>CILO1, CILO2</td>
</tr>
<tr>
<td>PLO3. Demonstration of ability to apply economic knowledge and analytical skills to address</td>
<td>CILO1, CILO2</td>
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<tr>
<td>policy and business problems</td>
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<td>PLO4. Awareness of ethical concerns in economic issues</td>
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<td>PLO5. Mastering of communication skills</td>
<td>CILO1</td>
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### TEACHING AND LEARNING ACTIVITIES

TLA1. Lectures:
- Instructor will give lectures on major concepts and issues.

TLA2. Empirical Projects:
- Students will be asked to test financial models and estimate financial relationships using different datasets and models covered.

TLA3. Tests:
- Tests will be given to assess student’s understanding of the concepts covered and thus ensure students are on track.

TLA4. Self-practice exercises:
- Self-practice exercises will be given to help students practice what they learn and discover additional results.

TLA5. Consultation:
- Students are also encouraged to discuss questions with the instructor via email or a forum in the class website, or by appointment.

### ASSESSMENT

<table>
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<tr>
<th>Assessment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>A1 Empirical Projects</td>
<td>100%</td>
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**Empirical Projects:** Three projects will be given. The aim of the projects is to let students practice the empirical analysis of financial data. All projects are meant to be completed individually. Each student will have to work on a set of financial time series that is different from the others. By the due date, each student should upload a zip file containing the report summarizing the findings, the datasets, and programme scripts, via the class website.

While the detailed assessment rubric may differ slightly across projects, the criteria of assessment can be broadly divided into two aspects:

1. Statistical Analysis (Logical Reasoning): 60%
2. Clarity (Readability): 40%

Due to the level of difficulty of the projects, the projects will carry different weights.

<table>
<thead>
<tr>
<th>Project</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Project #1:</td>
<td>20%</td>
</tr>
<tr>
<td>Project #2:</td>
<td>35%</td>
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<tr>
<td>Project #3:</td>
<td>45%</td>
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</tbody>
</table>

Late submissions are accepted within one week of the submission deadline (based on the time stamp appeared in our course website). A penalty of 10% will automatically apply to late submissions if it is submitted within one day after the submission deadline, and an additional 10% penalty for each additional day.

One second late is late. Students are responsible in making sure that their projects are uploaded before the submission deadline. To avoid penalty due to late submissions, students should try to start working on the assignment early and submit their work slightly earlier than the submission deadline (say, one-day earlier if they have an unstable network at home).

**Self-practice exercises:** Self-practice exercises will be given weekly. It will not be graded. Answers will be provided for self-checking. The content of these exercises are often included in the three in-class tests.
STANDARDS OF ASSESSMENT

Overall grades are given using the following criteria approximately:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Performance</th>
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<tbody>
<tr>
<td>A-, A, A+</td>
<td>&gt;90</td>
</tr>
<tr>
<td>B-, B, B+</td>
<td>75-90</td>
</tr>
<tr>
<td>C-, C, C+</td>
<td>60-75</td>
</tr>
<tr>
<td>D, C+</td>
<td>50-60</td>
</tr>
<tr>
<td>F</td>
<td>&lt;50</td>
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</table>

ACADEMIC CONDUCT

The University Regulations on academic dishonesty will be strictly enforced! Please check the University Statement on plagiarism on the web: http://www.hku.hk/plagiarism/

Academic dishonesty is behavior in which a deliberately fraudulent misrepresentation is employed in an attempt to gain undeserved intellectual credit, either for oneself or for another. It includes, but is not necessarily limited to, the following types of cases:

1. Plagiarism - The representation of someone else’s ideas as if they are one’s own. Where the arguments, data, designs, etc., of someone else are being used in a paper, report, oral presentation, or similar academic project, this fact must be made explicitly clear by citing the appropriate references. The references must fully indicate the extent to which any parts of the project are not one’s own work. Paraphrasing of someone else’s ideas is still using someone else’s ideas, and must be acknowledged.

2. Unauthorized Collaboration on Out-of-Class Projects - The representation of work as solely one’s own when in fact it is the result of a joint effort.

Where a candidate for a degree or other award uses the work of another person or persons without due acknowledgment:

1. The relevant Board of Examiners may impose a penalty in relation to the seriousness of the offence;

2. The relevant Board of Examiners may report the candidate to the Senate, where there is prima facie evidence of an intention to deceive and where sanctions beyond those in (1) might be invoked.

No plagiarism will be tolerated. Please refer to the section of Academic Conduct below for more details.

TENTATIVE CLASS SCHEDULE

1. A brief review of statistics and matrices

2. An introduction to R

   Reading:
   - JC: Ch. 1

4. Generalized Method of Moments
   Reading:
   - JC: Ch. 10-11, 13, 15-16
5. Event-study methodology
Abnormal returns, tests on abnormal returns, cross-sectional approach.
Reading:

- CLM: Ch. 4

6. Testing return predictability
Technical trading rules, measures of return predictability, review of test of forecasting power and bootstrap.
Reading:

- CLM: Ch. 2-3

7. GARCH
Reading: