

INTERNATIONAL UNIVERSITY OF JAPAN  
Graduate School of International Relations

Academic Year: 2013/2014

Term: Spring

Course	Course code DCC5282	Course title Empirical Finance	
Name of Instructor	Chun-Hung Kuo		Credit Number: 2
Instructor's contact Information	Office# 327	Office Hours Monday / 11:00~12:00	E-mail: chkuo@iuj.ac.jp
Class Schedule	Tuesday / 10:30 – 12:00		
Day / Time	Friday / 10:30 – 12:00		

Course Description:

The course introduces students the empirical aspects of financial studies. Since this course is empirical oriented, we will cover several time series models which are particular relevant for analyzing financial data. To achieve this goal, we will first discuss how the Box-Jenkins methodology helps us analyze the dynamic behavior of asset returns. Then, we will step into the territory of modeling volatilities of asset returns since financial uncertainties (i.e., risks) play an important role for making investment decisions. The course will cover both univariate and multivariate volatility models. Besides, this course will also introduce continuous-time financial models and their applications.

Learning Objectives:

Students will understand (i) how to use proper financial econometric models to analyze financial data, (ii) the essence of finance risks and means of quantifying these risks, and (iii) the differences between continuous- and discrete-time financial models. By doing empirical exercises, students will also gain experience in using statistical software such as STATA or R.

Career Relevance:

This course is particular useful for three types of students. First, students who plan to work in the financial industry, for this course introduces a set of econometric tools of analyzing financial time series data. Second, potential government officials, especially being responsible for the financial regulations, are suitable for this course, since we will discuss the state-of-the-art methods of measuring financial risks. Third, students planning to pursue studies on Finance are also welcome for the mathematical foundation of the modern finance theory will be briefly discussed.

Course Context or Rationalization:

This course is related to Statistical Methods, Econometrics (Data Analysis), and Time Series Analysis. The reason is that we will use econometric methods as the basic tool for analyzing financial data. This course also provides background knowledge for learning other finance courses such as

Financial Accounting and Reporting, and Investment and Asset Pricing.	
<p>Delivery Methods:</p> <p>The course will follow the traditional lecturing form. Students are required to take their own class notes. Since the course is mathematical oriented, writing down the derivations of each equation in class will help student better understand the materials.</p>	
<p>Assessment:</p> <p>Problem set: 20%</p> <p>Midterm exam: 50%</p> <p>Term paper: 30%</p>	
<p>Prerequisite:</p> <p>Mathematical Methods, Statistical Methods, and Econometrics (or Data Analysis)</p>	
Textbook(s)	<p>Required:</p> <p>Ruey S. Tasy, <i>Analysis of Financial Time Series</i>, 3rd Edition, John Wiley &amp; Sons, Inc., 2010 (ISBN 978-0-47041435-4)</p> <p>Reference books/Journal Articles:</p> <p>Salih N. Neftci, <i>An Introduction to the Mathematics of Financial Derivatives</i>, 2nd Edition, Academic Press (ISBN-10: 0125153929)</p> <p>Kennedy, <i>A Guide to Econometrics</i>, 6th Edition, Wiley-Blackwell, 2008 (ISBN-13: 978-1405182577)</p>
Class Outline	<ol style="list-style-type: none"> <li>1. Financial Time Series and Their Characteristics: Asset Returns</li> <li>2. Financial Time Series and Their Characteristics: Distribution Aspects</li> <li>3. Financial Time Series and Their Characteristics: Examples</li> <li>4. Linear Time Series Analysis and Its Applications: Stationarity and Autocorrelation</li> <li>5. Linear Time Series Analysis and Its Applications: Simple AR models</li> <li>6. Linear Time Series Analysis and Its Applications: Simple MA models</li> <li>7. Linear Time Series Analysis and Its Applications: Nonstationarity</li> <li>8. Linear Time Series Analysis and Its Applications: Serial Correlated Errors</li> <li>9. Conditional Heteroscedastic Models: Volatility</li> <li>10. Conditional Heteroscedastic Models: ARCH Models</li> <li>11. Conditional Heteroscedastic Models: GARCH Models</li> <li>12. Conditional Heteroscedastic Models: IGARCH Models and EGARCH Models</li> <li>13. Multivariate Time Series Models: Introduction</li> <li>14. Multivariate Time Series Models: VAR Models</li> <li>15. Multivariate Volatility Models and Their Applications: Introduction</li> <li>16. Multivariate Volatility Models and Their Applications: the DVEC Model</li> <li>17. Multivariate Volatility Models and Their Applications: the CCC Model</li> <li>18. Multivariate Volatility Models and Their Applications: the DCC Model</li> <li>19. Continuous-Time Models and Their Applications</li> <li>20. Continuous-Time Models and Their Applications</li> </ol>

Others (if any)	
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