Workshop on

Time series volatility modeling in Finance and Economics using Generalised Autoregressive Conditional Heteroscedasticity (GARCH) models

Date: 12 & 13 April 2013
Time: 9.00 a.m. – 5.00 p.m.
Venue: Practical Training Lab, H2-214
Faculty of Business and Finance
Universiti Tunku Abdul Rahman

INTRODUCTION
This two-day workshop gives a thorough overview of GARCH models with an emphasis on testing principles, applications and its implication on empirical work. The main purpose of the workshop is to provide participants with a foundation to pursue the basic theory and methodology as well as applied project involving the skills to analyze the volatility of time-series finance and economics data. In particular, this workshop sets out the statistical motivation for the test procedures, the practical questions they were supposed to answer, and the issues that arise in addressing questions about the source and empirical regularities of volatility from statistical summaries.

COURSE PROGRAMME
This is a two-day intensive course at modelling finance and economics data using G(ARCH) modelling with the aid of econometric software (EViews). The workshop is:

Partly theoretical:
- Deal with the statistical structure of the models and explore the properties.
- Necessary for understanding the tools/models (and for being critical towards them!).

Partly empirical:
- Feeling for real data. Hands-on experience.
- Promote an interest for doing empirical analyses.
- Introduce practical tools to perform analyses for e.g. undergraduate project paper/Post graduate theses/research and publications.

COURSE GOAL
By the end of the workshop, participants will have acquired detailed knowledge and extensive hands-on experience using EViews to

- Explain and discuss the variety of empirical regularities in the finance and economics data;
Discuss various statistical considerations and limitations of the conventional tests in dealing with the empirical regularities;
- Compare and contrast GARCH-type models;
- Apply ARCH and GARCH models to the investigation of volatility in finance/economics data.
- Examine the model misspecification of the GARCH models;
- Estimate GARCH model that incorporates a time-varying risk premium in the conditional mean (GARCH-M);
- Perform asymmetric test to examine the present of leverage effect (sign bias test); and
- Detect the presence of asymmetric/leverage effect and estimate asymmetric GARCH models using different versions of asymmetric GARCH models (APARCH, TGARCH and EGARCH).

In the hand-on exercise, we will
- Conduct a GARCH analysis of the excess return using Capital Asset Pricing Model (CAPM) model;

REQUIREMENTS
Pre-requisites:
1. Fundamental of econometrics
2. Basic knowledge in mathematics and statistics

WHO SHOULD ATTEND?
Academic staff, postgraduate students, researchers, and analysts in Economics and Finance.

COURSE TRAINER
Dr Eng Yoke Kee is an Assistant Professor in the Faculty of Business & Finance, Universiti Tunku Abdul Rahman, Malaysia. She obtained her Bachelor, Master Science Degree and Ph.D from School of Economics and Management, Universiti Putra Malaysia. Her research interests include applied macroeconomics and the application of econometrics analysis on economics issues. She has extensively used statistical packages such as Eviews, Gauss, Regression Analysis of Time Series (RATS), and Matlab in her research works as well as in handling statistical laboratory while teaching subject likes time series analysis and econometrics. Her articles have been published in Economics Letters, International Review of Economics and Finance, The North American Journal of Economics and Finance, Journal of the Asia Pacific Economy, among many others.

COURSE FEE
Inclusive of lunch and refreshments, course notes and certificate of attendance, the course fee is RM250 per person. The course fee does not cover accommodation and travelling expenses.

ENQUIRIES
Technical details, registration and miscellaneous:
Mr Wong Chin Yoong
Centre of Economic Studies
Universiti Tunku Abdul Rahman
Tel: 05-468 888 (ext: 1035)
HP: 012-6873676
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SUGGESTED ACCOMMODATION
Grand Kampar Hotel
2188, Jalan Timah, Bandar Baru Kampar,
31900 Kampar, Perak Darul Ridzuan,
Malaysia.
Tel: +605-466 2111
Fax: +605-466 3222
Sales Fax: +605-466 4666
Web: www.grandkamparhotel.com.my
Email: inquiry@grandkamparhotel.com.my
Sales Email: sales@grandkamparhotel.com.my
PROPOSED COURSE OUTLINES
The course is divided into both theory and computer classes whereby the computer classes allow the participants of the workshop to work through a number of questions with data sets.

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<th>Workshop Schedule</th>
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<td><strong>D A Y 1</strong></td>
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<td>08.30 – 09.00 a.m.</td>
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| 09.00 – 10.30 a.m. | **Topic 1:** Empirical regularities of high frequency data in economics and finance  
  - Stylized features of financial time series  
  - Heteroskedasticity revisited  
  **Topic 2:** Overview of GARCH-type models  
  - Basic structures and properties  
  - Variations on the GARCH models  
  - Multivariate GARCH models |
| 10.30 – 10.45 a.m. | Break |
| 10.45 – 01.00 p.m. | **Topic 3:** Basic GARCH model  
  - Testing for ARCH effects  
  - Estimation of basic GARCH model  
  - Misspecification testing on GARCH model  
  - Hand-on lab session |
| 01.00 – 02.30 p.m. | Lunch |
| 02.30 – 03.30 p.m. | **Topic 4:** GARCH model with risk premium  
  - GARCH-in-Mean model  
  - Hand-on lab session |
| 03.30 – 03.45 p.m. | Tea break |
| 03.45 – 05.00 p.m. |  
  - Hand-on lab session |
| **D A Y 2** |
| 09.00 – 10.45 a.m. | **Topic 5:** Asymmetric GARCH models  
  - Testing for asymmetries in volatility: Sign bias test  
  - Asymmetric Power Autoregressive Conditional Heteroskedasticity (APARCH) model  
  - Threshold GARCH (TGARCH) model  
  - Exponential GARCH (EGARCH) model |
| 10.30 – 10.45 a.m. | Break |
| 10.45 – 01.00 p.m. |  
  - Hand-on lab session |
| 01.00 – 02.00 p.m. | Lunch |
| 02.00 – 03.30 p.m. |  
  - Hand-on lab session: case study |
| 03.30 – 03.45 p.m. | Tea break |
| 03.45 – 05.00 p.m. |  
  - Hand-on lab session: case study  
  - Summary  
  - Wrap up, Q&A |
| 05.00 – 05.15 p.m. | Certificate Presentation |