Teaching Time Series analysis course using RcmdrPlugin.Econometrics

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Outline

- Overview R for Time Series Analysis
- Overview RcmdrPlugin.Econometrics
- Examples and software demonstration

R-GUI

- Most Popular GUI: R-Commander (Fox, 2005)
- In general, R commander is a useful GUI for doing the most common use basic statistical analysis. However, it does not contain menus for econometric analysis (except for regression analysis).
- However, it can be easily extended using suitable plug-in (Fox, 2009).

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R for Econometrics/Time Series Analysis

- For time series analysis, there are various packages of R, available under the taskviews Econometrics, Finance and Time Series in CRAN
- The main user interaction via Command Line Interface (CLI).
- See, for instance, Cryer and Chan (2008), Kleiber and Zeilis (2008), Pfaff (2008), Racine and Hyndman (2002), Vinod (2008) and Cribari-Neto and Zarkos (1999) for a comprehensive discussion of R application in Time Series and Econometrics modeling.

R for Econometrics/Time Series Analysis (Cont'd)

- For teaching purpose, R-CLI seems to be less user friendly and relatively dicult to use, especially if we compare it with the commerical softwares which has an extensive GUI capabilities, such as Eviews.
- Hodgess and Vobach (2008) introduced RcmdrPlugin.epack, a R-GUI package for doing time series analysis.
- In this talk, we introduce a new GUI package for time series analysis, called as RcmdrPlugin.Econometrics (Rosadi et al., 2009).

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Goals design and developments

- Open Source and Multiplatforms
- The ease of use
- Comprehensive Input/Output dialog, Compatible with Commercial (or better??)
- Menu Coverage

Goals: Menu Coverage

Currently contain several menus:

- Simulation (of ARIMA and ARCH/GARCH models)
- Statistics (Numerical summary, Jarque Berra Statistics for normality test),
- Transformation (Box-Cox Transformation, Difference, Log Difference, Time Series conversion, ADF Test for stationarity),
- Plot (Time Series Plot and ACF/PACF plot)
- Univariate time series analysis (Smoothing, Decomposition, ARIMA, Automatic ARIMA, ARIMAX, ARCH/GARCH).

Goals: Menu Coverage (cont'd)

The 'to do list' for the future development of the plug-in,

- spectral analysis,
- multivariate time series analysis such as VAR and Cointegration analysis, Granger Causality, ECM and VECM, etc.; dynamic linear model (ADL)-> on going!!
- panel model
- and several other popular linear and non linear models

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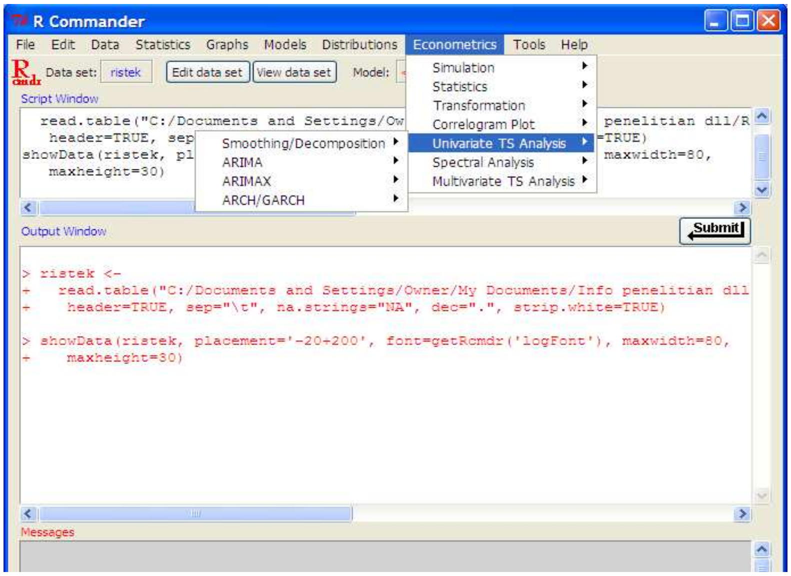

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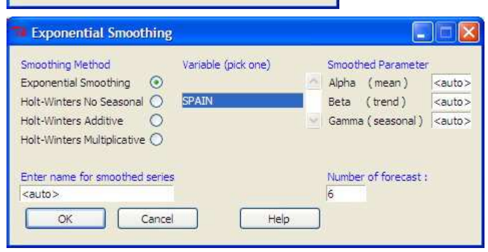

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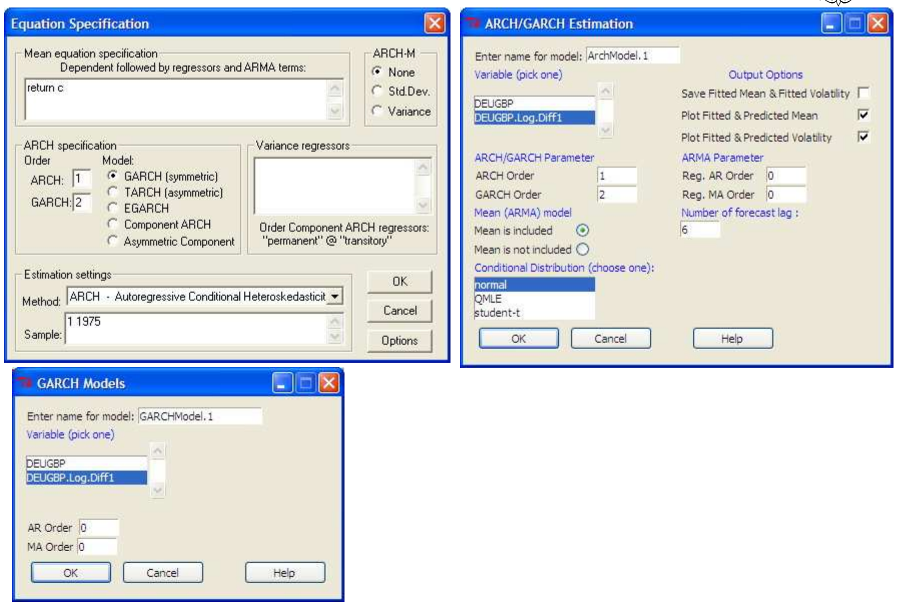

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What do Students say?

- Used it during Semester II, 2009/2010, in addition to Eviews
- Students are happy, they can focus on understanding time series models, not the computation
- It would be better if we have a text book specially designed for doing time series analysis using R and the Rcmdr plugins -> I consider to write one, almost finish although still in Bahasa Indonesia

Empirical Examples

- Smoothing
- ARCH/GARCH

Thank for Your attention!