

**KYIV SCHOOL OF ECONOMICS**  
**Financial Econometrics (2nd part):**  
**Introduction to Financial Time Series, Term V, 2011**  
Instructor: Maksym Obrizan

HOMEWORK 1 by \_\_\_\_\_(First and Last Name)

**Due:** Noon on Wednesday, May 18th at the beginning of class. Homeworks submitted 10 minutes after class begins **will not be accepted!**

**Instructions:** Answer all questions to the best of your knowledge in the space provided. Each problem has the same weight for a total of 100 points. Similarly, all parts within each problem are equally weighted. To get full credit **show your calculations when applicable** and not just answers. The data for this homework can be downloaded from the website accompanying "Analysis of Financial Time Series" by Ruey Tsay (1st Edition) located at

<http://www.gsb.uchicago.edu/fac/ruey.tsay/teaching/fts>

To solve empirical problems feel free to use **any software** you are familiar with (such as Stata). It is natural if your results slightly differ from mine because different algorithms may be employed. However, save your do files in case I request you to send them to me. If you plan to work in financial area or go to a PhD you may want to familiarize yourself with a free statistical package R that has lots of useful toolboxes ("tseries", "FinTS" accompanies the Tsay text for some exercises etc).

I. Solve problem 6 on page 77.

II. Solve problem 8 on page 77.

III. Obtain the data file "qunemrate.dat" with the US quarterly unemployment rate, seasonally adjusted, from 1948 to the second quarter of 1991. Consider the change series  $y_t = x_t - x_{t-1}$ , where  $x_t$  is the quarterly unemployment rate. Build an AR model for the  $y_t$  series. Does this model suggest the existence of business cycles?

IV. Solve problem 6 on page 122.

V. Solve problem 2 on page 170 and the first two parts (out of 4) of problem 5 on page 171.

VI. Solve problem 3 on pages 170-171.