

## Lab Assignment 3, ORFE 569

Due Apr. 19, 2007

**Objective:** The objective of this assignment is to construct a program (Fortran or C, or whatever computer language) to implement the Bayes estimation via filtering for your assigned model.

Two sets of sample Fortran 77 programs with data sets are provided on the course website for your reference.

First, describe in detail the recursive algorithm that you will construct programs for as you did in Homework 3.

After constructing the programs, you will test your programs using a simulated data set you generate for Lab Assignment 2.

Debugging could be a painful experience and please check for each other!

The criteria are that your Bayes estimates should be close to the true parameter values and the true  $X$  and that the true parameter values and the true  $X$  should be within two standard errors of your Bayes estimates.

For the simulated data set, you shall produce tables like **TABLE I** in Zeng (2004) and produce plots like **Figure 5.2** of Zeng (2003) and/or **Fig. 2 and 3** of Zeng (2004).

After your program passing the test, you may apply your program to real data set of stock or bond and obtain Bayes estimates. You shall produce tables like **TABLE 5.2** in Zeng (2003) or **TABLE II** in Zeng (2004), and produce plots like **Fig. 4 and 5** of Zeng (2004).

Please email me your two set of programs as well as the lab assignment. One set of program for simulated data and the other for real data. Each set should include programs and parameter files and the corresponding data set.

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You may use Unix computers in Princeton University and the following websites will be helpful.

<http://helpdesk.princeton.edu/kb/display.plx?ID=9780> go to registration.

<http://helpdesk.princeton.edu/kb/display.plx?ID=8893> go to "Enable Unix Account".

<http://helpdesk.princeton.edu/kb/display.plx?ID=9660> go to "Basic Unix Commands" to learn some basics.

<http://helpdesk.princeton.edu/kb/display.plx?id=9280> You need to learn a Unix editor, either *Emacs* or *vi* to write codes. Emacs is more powerful. But make sure you can use it on the machine.

<https://opm.princeton.edu/forms/contact-helpdesk.html> for help