

Homework 8

Ma641 Time Series I

due by class time 6:15pm, Monday August 11, 2008

Please try to submit a hardcopy of the report in class. If you chose the elearn submission option elearn please convert the report to pdf format before submitting.

Import the attached file *Caterpillar00-08.csv* which contains the daily stock data for Caterpillar (CAT) from Jan 2000 to Aug 2008 and calculate continuously compounded returns using the adjusted closing data. Test the order in the imported data.

1. First model the returns. What is your fitted model.
2. Test for ARCH effects in the data. If there are none you can stop here.
3. Specify an ARCH model for the data. Write down the model.
4. Fit a GARCH(1,1) model to the data using all three error distributions (a total of 3 models). Write down the fitted models.
5. Among the 4 models chose one that you believe is the best. Explain.
6. Fit an IGARCH(1,1) model using Student-t innovations. Write down the model.
7. Fit a GARCH-M(1,1) model using Student-t innovations. Write down the model.
8. Is the ARCH-in-mean parameter significant?

9. Fit a GJR(1,1) model with Student-t innovations. Write down the model.
10. Is the “leverage” parameter significant?
11. Finally, compare these last 3 models with the best model selected earlier. Which one do you believe it is better. Explain.