

Homework 1

Ma641 Time Series I

due by class time 6:15pm, Wednesday May 27, 2009

You can hand in the assignments either in class at the beginning of the lecture or using the elearn page. If you chose elearn please convert the report to pdf format before submitting. Alternately, you may email me the file directly.

1. Use the minute Microsoft data provided on the course webpage¹.
2. Use R and calculate the vector of simple returns. Calculate the mean standard deviation, skewness, excess kurtosis min and max. Express these numbers as percentages. If you express the return vector as percentages first and then calculate the above numerical measures will the above results change? Why or why not?
3. Transform the vector of simple returns in the vector of logreturns (without using the prices themselves). Write down the transformation used. Calculate the above measures for this vector as well.
4. Test normality of the logreturns. To this end test the null hypothesis that the skewness measure of the returns has mean zero (is zero). Then test the null hypothesis that the excess kurtosis of the return has mean zero (is zero). Please write very clearly the hypotheses, the test statistic, the rejection region and then perform the test and write your conclusion.

¹You may also use the Yahoo! Finance webpage and download a 3 year daily series of data for a stock of your choice. Make sure that the stock you choose has at least a 1 year history, you need enough data for your analysis.

5. Check the normality of the logreturns using graphical means. Test the normality of returns. Perform 3 separate tests. Use 5% significance level.

Any other problems assigned in class and not mentioned here count as bonus problems and they will earn bonus points for your assignment.