

Financial Econometrics

Homework #1

Due: April 2, 2013 Jin-Lung Lin

1. Consider the daily returns of TAIEX, TSMC(2330), UMC(2303), FPG(1301), and China Steel (2002) from January 2, 2004 to February 27, 2013. You can extract the data from the website of Taiwan Stock Exchange or from the databank licensed to DongHwa University.
 - (a) Compute the sample mean, standard deviation, skewness, excess kurtosis, minimum, and maximum of each simple return series.
 - (b) Transform the simple returns to log returns. Compute the sample mean, standard deviation, skewness, excess kurtosis, minimum, and maximum of each log return series.
 - (c) Test the null hypothesis that the mean of the log returns of TSMC stock is zero. Use 5% significance level to draw your conclusion.
2. Answer the same questions as in Problem 1 but using monthly returns of the same stocks.
3. Consider the monthly stock returns of S&P composite index from January 1940 to September 2011. The returns includes dividend distributions. Data file is m-ge3dx-4011.txt (date, ge, vw, sp). Perform the following tests and draw conclusions using the 5% significance level.
 - (a) Test $H_0 : \mu = 0$ versus $H_a : \mu \neq 0$ where μ denotes the mean return.
 - (b) Test $m_3 = 0$ versus $H_a : m_3 \neq 0$ where m_3 denotes the skewness.
 - (c) Test $H_0 : K = 0$ versus $H_a : K \neq 0$ where K denotes the kurtosis.
4. Daily spot exchange rate of NTD per USD can be obtained from the website of Central Bank of the Republic of China (Taiwan). Consider the exchange rate from Jan. 3, 2000 to March 15, 2013.
 - (i) Compute the daily log return of the exchange rate.
 - (ii) Compute the sample mean, standard deviation, skewness, excess kurtosis, minimum, and maximum of the exchange rate.
 - (iii) Obtain a density plot of the daily log return of the exchange rate.
 - (iv) Test $H_0 : \mu = 0$ versus $H_a : \mu \neq 0$ where μ denotes the mean of the daily log return of the USD-TWD exchange rate. Use the 5% significance level to draw the conclusion.