QUESTIONS

Question 1

You currently own portfolio B, which replicates the market. Consider security A and security C whose returns are described by the following regression equations:

$$r_A = \underset{(0.033)}{0.0426} - \underset{(0.001)}{0.325} r_B \qquad r_C = \underset{(0.076)}{0.001} + \underset{(0.02)}{0.972} r_B$$

$$R^2 = 0.38 \qquad R^2 = 0.78$$

The values in the parenthesis are showing the p-values associated with coefficients. Further, you have estimated that the standard deviation of the market return is 6% and its expected return is 9%. The value of the risk free rate in this economy is 2%.

a. Explain whether inclusion of security A and security C in your portfolio B would be good for diversification purposes.

b. What would be the systematic risk of security A and security C? What would be their total risk?

c. According to the Single Index Model, what would be the covariance and correlation coefficient between security A and security C?

d. What would be the expected return of portfolio AC if you decide to invest £3.1 million in A and £1.5million in C?

e. What does linear pricing in the CAPM imply?

Question 2

Using the monthly prices data (October 2007-2012) provided for 20 stocks and for the S&P500 market index, calculate:

a. The average, standard deviation, maximum and minimum returns for each stock and market index;
b. The correlation and covariance matrix
c. the beta coefficient for each of the stocks.
d. The systematic and unsystematic risk component of each stock.
e. Test the Beta persistence of Betas across time

Question 3

An investor who is testing the presence of styles in a portfolio of stocks obtained the following result of the time-series regression (values in parentheses are t-statistics):

$$R_p = \underset{(1.18)}{0.025} + \underset{(5.78)}{0.71} R_M - \underset{(-3.55)}{1.2} R_{G-V} + \underset{(0.76)}{0.58} R_{L-S} + \varepsilon_p$$

Explain the model investor is using to test the presence of styles and interpret the values of style betas obtained.

Question 4

Using Fama and French monthly factors (SMB and HML) from January 2007 to December 2012 and the Mutual Funds end of the month prices calculate:

a. The average, standard deviation, maximum and minimum returns for each mutual fund;
b. The style coefficients for each mutual fund
c. Is there evidence of alpha creation during the period analysed? Are years and funds different from each other?
d. Is there any evidence of market timing?
e. Is there any evidence of Performance Persistence?