Introduction to Finance - II
Quiz on multivariate stock returns

Read the questions carefully. Don't make them harder than they are! Answer succinctly and precisely. Show all of your work.

1. Suppose that you have a spreadsheet with a column of 10 years worth of monthly returns on LRCX and MXIM in Excel. For example, you have 120 monthly returns on LRCX in Rows 3 through 122 in column C and the same-dated returns on MXIM in column D, in your spreadsheet.

   (a) How would you compute the covariance between LRCX and MXIM's monthly returns? Use Excel to flesh out all of the necessary intermediate variables.

   (b) How would you compute the correlation between LRCX and MXIM's monthly returns? Use Excel to flesh out all of the necessary intermediate variables.

2. Suppose that you obtained the following values: LRCX's expected monthly return is 0.45%, and monthly return variance is 0.016. MXIM's expected monthly return is 0.6%, and monthly return variance is 0.0088. The correlation between the two stocks' returns is 0.43. Form a portfolio with 60% in LRCX and 40% in MXIM.

   (a) What is this portfolio's monthly expected return?

   (b) What is this portfolio's monthly standard deviation?

   (c) What are the 68%, 95%, and 99% ranges for the annual returns on this portfolio–assuming that its returns are normally distributed?

3. Suppose that instead of 0.43, the correlation between the 2 stocks' returns were 0. Form a portfolio with 60% in LRCX and 40% in MXIM.

   (a) What is this portfolio's monthly expected return?

   (b) What is this portfolio's monthly standard deviation?

   (c) What are the 68%, 95%, and 99% ranges for the annual returns on this portfolio–assuming that its returns are normally distributed?

   (d) Discuss the role of the correlation on the portfolio's return distribution (i.e., compare the portfolio when the correlation is 0.43 to that when the correlation is 0.