BEM 103 Introduction to Finance.

Homework 5:Portfolios

Due Monday November 4 5pm (in TA or instructor boxes).

1. Financial Literacy: Answer these questions in 3 steps. (1) give an answer to the question, (2) look over the material assigned for class and find a definition (3) modify, if need be, your first answer. The goal is not for you to memorize a given answer but to be sure you can explain the concept to someone. If you can't, then you do not control that concept.
   a. Mean-Variance trade-off
   b. Risk Aversion
   c. Expected Utility
   d. Utility of the expected value
   e. Portfolio with Short sales
   f. Risk
   g. Portfolio Seperation

3. Mean Variance trade-off
   A. Review all the assets you have chosen up to October 24 (journal #4), Using returns and variance from weekly data over the last year, plot them on a mean-variance graph.
   B. Going back to your decision 2, and using the yield from the bond you picked week 1 as your "riskless" yield, what is your "mean-stdeviation" trade-off parameter? What is your mean variance parameter?
   C. Is there a stock you chose either in journal 4 or 3 that dominates your choice in Journal 2?

Note to do so you will need both returns and variance, these can be easily downloaded from Yahoo finance or other websites. You will need to do your own computations of return and variance

3 Efficiency frontier
   A. Return to the stocks choices of Journal 3. (a) If you picked two or fewer stocks, then add at least one of Apple Google Amazon). (a) If you picked more than three stocks then focus on the top three, and scale up your investment so that their relative weights stay the same. Then using this 'new' three stock portfolio, plot the efficient frontier with no short sales.
   B. Is your portfolio on the efficient frontier? By how much could you increase your return without increasing your variance by changing portfolio weights, and by how much could decrease your variance without reducing return?
   C. Taking the 3year T-Bill (0.6% expected yield) as the riskless security, plot the efficient separated portfolio frontier. By how much could you increase your return without increasing your variance by changing portfolio weights, and by how much could decrease your variance without reducing return?
   D. By how much does introducing a riskless asset improve your portfolio return (assuming you chose to keep variance constant)?

4 Personal finance

Your are a financial advisor, you are advising a client about what investment portfolios to choose. Using the linked CSV file that you can import into Excell or a statistical package propose an optimal portfolio in each of the cases below. In each case your only investment choices are 3-year T-Bills, and three stock funds (NASDAQ, DOW and FTSE100)

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A. Compute the monthly returns for each investment opportunity, then the mean return and the variance-covariance matrix. For each five year period 1991-5 1996-2000, and 2011-present….as well as for the whole period.
B. Compute the efficient frontier for the data over the whole period.

Target return 0.005%

C. What is the efficient portfolio given his return target?
D. Your client arrives January 1 1996 and has a five year horizon. What is the efficient portfolio given the data 1991-1995 given his target return? What is its performance given the realized returns 1996-2001?
E. Your client arrives January 1 2001 and has a five year horizon. What is the portfolio you propose given the data 1995-2001? What is its performance given the realized returns 2002-2006?
F. Would your client have been better off staying with his original weights (from question D)?
G. Your client arrives January 1 2006 and has a five year horizon. What is the portfolio you propose given the data 2001-2006? What is its performance given the realized returns 2006-2011?

Target return 0.01%

H. Your client arrives January 1 1996 and has a five year horizon. What is the efficient portfolio given the data 1991-1995 if his target return is 0.005% per month? What is its performance given the realized returns 1996-2001?
I. Your client arrives January 1 2001 and has a five year horizon. What is the portfolio you propose given the data 1995-2001? What is its performance given the realized returns 2002-2006?
J. Would your client have been better off staying with his original weights (from question B)?
K. Your client arrives January 1 2006 and has a five year horizon. What is the portfolio you propose given the data 2001-2006? What is its performance given the realized returns 2006-2011?