Econ 413 Assignment 2

I Portfolio construction and analysis

**I.I** Construct a portfolio (7/18/16 – 7/18/17)

1. Give a short summary about the following stocks
   1. BHP,FB,AXP,BND,MDIT,SP500
2. Download the **1 year daily close**prices for SP500 index from yahoo finance
   1. http://finance.yahoo.com/q?s=%5EGSPC
3. Download the **1 year daily close** prices for the stocks named in #1

(should have 253 close prices for each stock)

1. Import **daily close values** and **betas** into excel and compute
   1. Log return
   2. Expected return, Variance – VAR function, and Standard Deviation matrix
   3. Covariance matrix
   4. Correlation matrix
2. Create a portfolio composed of FB with each of the other stocks
   1. FB weight = 0.45, find stock 2 weight
   2. find the return on the portfolios with stock weights found in a.
   3. find the portfolio variances using the correlation coefficient
   4. find the portfolio standard deviations
3. Portfolio Analysis
   1. State the portfolio with the lowest risk
   2. Look at the correlation coefficient for each pair of FB,stock 2 and find the lowest
   3. Is the lowest risk portfolio ( found in 6.a) also the portfolio with the lowest correlation coefficient?

II Efficient Frontier and the Minimum Variance Portfolio

**II.I** Portfolio: FB, MDIT

1. Efficient Frontier

1. Input the ER,Variance, sd and CORREL(FB,MDIT) into table
2. Find the portfolio return for the varying stock weights (see excel template)
3. Find the portfolio variance
4. Find the portfolio sd
5. plot the Efficient Frontier ( x axis is the sd , y axis is the return )
6. Highlight the lowest risk (σP) combination

**II.II** 2. Find the MVP

Using the equations for XA , XB, rP and σ2P on Lecture 4 slide 19

1. Find XA and XB
2. Find rP , σ2Pand σP
3. Compare the lowest risk,return combo in EF to the σP,rP in the MVP, which is lower risk?
4. What decisions can be made to better this portfolio?

III CAPM

III.I 1. Estimate Beta

Using return data calculated in Part I

1. Estimate Beta with formula  and compare with the Beta given from yahoo finance.

( To estimate beta , our market portfolio is the SP500)

2. CAPM

a. find the 3 month US T bill rate as of 7/18/17, input the value into the rf cell

http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield

***Note: the values on this page are in percentage already***

***i.e if the value stated is 0.05 it is 0.05% or 0.0005***

b. input the expected return for the SP500 in the ERM cell (calculated in Part 1 4b)

c. input the Estimated betas you found in III.I into the Beta row

d. Find the CAPM for each stock using the equation:



3. SML

If we vary FB stock beta from -1 to 1 by increments of .5

a. Find the CAPM for each given beta

b. plot the SML ( x axis is risk(beta), y axis is CAPM)

c. Compare the CAPM value of FB cell O8 to the expected return calculated in Part 1 4b. Is FB expected return above ( undervalued) or below (overvalued) the CAPM required rate of return according to our beta calculations?

d. what conclusions do you find given our SML

Extra - Arbitrage Pricing Theory

* Research how APT differs from CAPM and answer the questionnaire
* Suppose that 3 factors have been identified for the U.S. economy:

the Unemployment rate, [UEmR], Return of Oil [Ro] and the inflation rate[IR].

* UEmR is expected to be 6.6%, Ro is expected to be 10% and IR is expected to be 3%.
* A stock with a beta of 0.33 on UEmR, 1.2 on Ro and 1.5 on IR currently is expected to return 15%.
* If UEmR is actually 7.8%, Ro is 1.27% and IR is 3.7%, what is the revised estimate of the return on the stock?

**DON’T FORGET TO SUBMIT YOUR RP2 QUESTIONNAIRE UNDER TESTS & QUIZZES**