Assignment 1 - Math 772
Optimal Investment, Risk Measures and Pricing in Incomplete Markets

04/01/2006

1. Choose 4 different companies listed in the NYSE and download the end-of-month prices for their stock for the years 2000 to 2005. Based on these time series, use a standard statistical package to estimate their *monthly* mean rate of return and variance–covariance matrix.

2. Use the MATLAB built-in function `quadprg` to write a routine that takes as inputs the parameters `mu,Sigma`, corresponding to the mean and variance-covariance matrix of returns on 4 different stocks, and traces the *efficient frontier* given by a mean-variance criterion for an investment over the period of one month. Make sure that your routine contains a preliminary step that calculates the minimal and maximal return and then proceeds to calculate an appropriate number of points on the frontier between these two bounds.

3. Select *four* points on this efficient frontier and record the relative portfolio weights corresponding to them and calculate the expected return and variance for the corresponding portfolios. Comment on the differences between preferences that would lead to these choices.