AMSC/MATH 420 Project Two, Spring 2014
Modeling Portfolios: Statistical Validation of IID Models

presentation due Friday, 2 May, 2014

report due Monday, 12 May, 2014

This project explores how to use a statistical test to guide the choice of the risk aversion coefficient. Consider the following groups of assets:

(A) this will be the Group A from the first project;

(B) this will be the Group B from the first project of one of the team members and will decided after the team is assigned.

For each of the years ending December 31 of the years 2008-2013 use one-year histories of daily return rates and uniform weights to calabrate $\mathbf{m}$ and $\mathbf{V}$. Also use one-year histories of weekly return rates and uniform weights to calabrate $\mathbf{m}_{\mathrm{W}}$ and $\mathbf{V}_{\mathrm{W}}$.

Discuss how $\mathbf{m}_{\mathrm{W}}$ and $\mathbf{m}$, and $\mathbf{V}_{\mathrm{W}}$ and $\mathbf{V}$ should be related if the IID model is valid. This will require more knowledge of IID models than was covered in the lectures. Devise at least two measures of how well each of these two relationships is satisfied. (There should be at least four measures in all.)

Repeat the last homework assignment with $\chi = 0$, .25, .5, .75, 1, 1.25, 1.5, 1.75 and 2. Determine which value of χ yields the best performing portfolios in the subsequent year. Use scatter plots to seek correlations between these best χ and the measures that you devised above. Identify the two measures with the strongest correlation and find a linear function of those measures that best fits these χ.