Math 420, Spring 2017
Second Project: Analytics and Risk Aversion

presentation due Thursday, 4 May, 2017
report due Thursday, 11 May, 2017

This project explores how some analytical factors might influence the choice of the risk coefficient χ. 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. It will be filled in once the team is assigned.
(C) This will be the Group C from the first project of one of the team members. It will be filled in once the team is assigned.

For each of the years ending December 31 of the years 2002-2016 use one-year histories of daily returns and uniform weights to calabrate $\mathbf{m}$ and $\mathbf{V}$.

Devise at least two measures of how well the weak efficient market hypothesis holds — i.e. of how far the index funds are from the efficient frontier for the risky assets.

Devise at least two measures of how far the efficient long frontier for the risky assets is from the efficient frontier for the risky assets.

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 two measures, one associated with the efficient market hypothesis and one associated with efficient long frontiers, that have the strongest correlation and find a linear function of those measures that best fits these χ.