AMSC/Math 420, Spring 2014
First Project
Modeling Potfolios: Efficient Market Hypothesis
Presentation due Monday, 10 March 2014
Report due Friday, 14 March 2014

This project explores how well the (weak) efficient market hyporthesis holds. Consider the following groups of assets.

  (A) VFINX, VBTIX, DJP (beginners portfolio)
  (B) PESPX, DFSTX, VFITX, VFIDX

Identify these funds and describe their holdings.

Compute and graph the frontier for the risky assets in group (A), group (B), and groups (A) and (B) combined using one-year histories with uniform weights for each of the years that end on December 31 of 2008-2013. Do the same for $\mathbf{f}_{mv}$. Comment on the implications of what you find.

Assuming that the safe investment is U.S. T-Bills, compute $\mathbf{f}_{st}$. Assuming that the credit-line is three points higher than the U.S. T-Bill rate, compute $\mathbf{f}_{ct}$. Graph the associated efficient frontiers. Comment on the implications of what you find.

In a similar manner, compute and graph the long frontier for the risky assets in group (A), group (B), and groups (A) and (B) combined using one-year histories with uniform weights for each of the years ending December 31 of 2008-2013. Graph the associated efficient long frontiers with a safe investment of U.S. T-Bills. Comment on the implications of what you find.

Describe the (weak) efficient market hypothesis. Why does it imply that indices of major sectors should lie near the efficient frontier. Does the analysis you did above support it? Identify the years in which it appears to hold and those in which it does not appear to hold. How do these years relate to years in which the market rises and falls? Explore any relationship that you discover by testing it with groups (A) and (B) combined for years that end on June 30 of 2009-2013.