

AMSC/Math 420, Spring 2014
First Project
Modeling Portfolios: Rolling Frontiers

Presentation due Monday, 10 March 2014

Report due Friday, 14 March 2014

This project explores how efficient frontiers evolve over time. Consider the following groups of assets.

(A) VFINX, VBTIX, DJP (beginners portfolio)

(B) PESPX, MAIX, VFITX, PCRAX

Identify these funds and describe their holdings.

Show how the efficient frontier for the risky assets in group (A), group (B), and groups (A) and (B) combined evolve in time using one-year histories with uniform weights. Do this for the year ending December 31 of 2008 and every quarter thereafter until December 31 of 2013 — i.e. for the year ending March 31 of 2009, the year ending June 30 of 2009, and so forth for every quarter until December 31 of 2013. Show these results as a slide-show or slow-frame movie. Do the same for \mathbf{f}_{mv} . Comment on the implications of what you see.

Assuming that the safe investment is U.S. T-Bills, show how \mathbf{f}_{st} evolves. Assuming that the credit-line is three points higher than the U.S. T-Bill rate show how \mathbf{f}_{ct} evolves. Show how the associated efficient frontiers evolve. Comment on the implications of what you see.

In a similar manner, show how the long frontier for the risky assets in group (A), group (B), and groups (A) and (B) combined evolve. Show how the associated efficient long frontiers evolve with a safe investment of U.S. T-Bills. Comment on the implications of what you see.