

AMSC/Math 420, Spring 2014
First Project
Modeling Portfolios: Capital Asset Pricing Model

Presentation due Monday, 10 March 2014

Report due Friday, 14 March 2014

This project explores the Capital Asset Pricing Model (CAPM). Consider the following groups of assets.

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

(B) PESPX, DFSTX, MAIX, DFEMX

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 Capital Asset Pricing Model. For each of the assets in group (B) compute its “beta” with respect to VFINX for the years that end on December 31 of 2008-2013. Identify the cases in which the beta gave a good or bad indication of future performance. Explore any relationship that you discover by testing it with group (B) for earlier years that end on December 31 — say 1999-2007.