

Math 420, Spring 2016

First Project: Efficient Market Hypothesis

presentation Tuesday, 8 March, 2016

report due Thursday, 10 March, 2016

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

- (A) VFINX, VBTIX, VGSIX.
- (B) PESPX, DESTX, VFIDX.
- (C) Apple, GE, Exxon-Mobil.

Identify the funds in (A) and (B) and describe their holdings. (This information should inform some of your subsequent answers.)

Compute the frontiers for the risky assets in group (A), groups (A) and (B) combined, and groups (A), (B), and (C) combined using one-year histories with uniform weights for each of the years ending December 31 of 2010-2015. 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} . (You should identify when these tangency portfolios either do not exist or are not solvent.) Graph the associated efficient frontiers. Comment on the implications of what you find.

In a similar manner, graph the efficient long frontiers, for the risky assets in group (A), groups (A) and (B) combined, and groups (A), (B), and (C) combined, both with and without 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? If so, how or when? Comment on the implications of what you find.