Math 420, Spring 2018
Second Project: Estimator Uncertainties

presentation due Tuesday, 8 May, 2018
report due Monday, 14 May, 2018

This project explores how to use statistical metrics to guide the choice of the caution coefficient χ. Consider the asset groups A, B, and C assigned to you on the class website under "Projects".

For each of the years ending December 31 of the years 2003-2017 use one-year histories of daily returns and uniform weights to calabrate $\mathbf{m}$ and $\mathbf{V}$ for

- Group A,
- Group A and B combined,
- Groups A, B, and C combined.

Present at least four statistical metrics of estimator uncertainty. Apply them to each of the above groupings for each of the fifteen years.

Repeat the last homework assignment with $\zeta = 0$, .25, .5, .75, 1, 1.25, 1.5, 1.75 and 2. For each of the first fourteen years determine which value of ζ yields the best performing portfolio in the subsequent year. Use scatter plots to seek correlations between these best ζ and the metrics that you presented above. Identify which if any of your metrics might have been useful in selecting ζ for the coming year.