University of California, Los Angeles
Department of Statistics

Statistics C183/C283 **Instructor: Nicolas Christou**

Project 4

Please answer the following questions assuming the single index model holds. Use your project data in the period 01-Jan-2014 to 01-Jan-2019.

1. Compute estimates for $\alpha_i, \beta_i, \sigma^2_{\epsilon_i}$, $i = 1, 2, \ldots, 30$ by regressing each stock's return on the $S\&P500$.
2. Construct the 30×30 variance covariance matrix based on the single index model.
3. Answer the same question as in project 2, part (e) using the new inputs from (1) above. Draw the frontier on the same plot as in project 2. Now you will have two frontiers, one using the historical variance covariance matrix (project 2) and one using the variance covariance matrix with inputs from the single index model.