Factor-based Analysis of Mutual Fund Performance

Data Bootcamp S21 Final Project

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Factor-Based Model: From CAPM to Fama-French

Capital Asset Pricing Model: $R_i - R_f = \alpha_i + \beta(R_M - R_f)$

Traditional wisdom of beta and market risk as the only systematic risk factor is challenged by many empirical studies

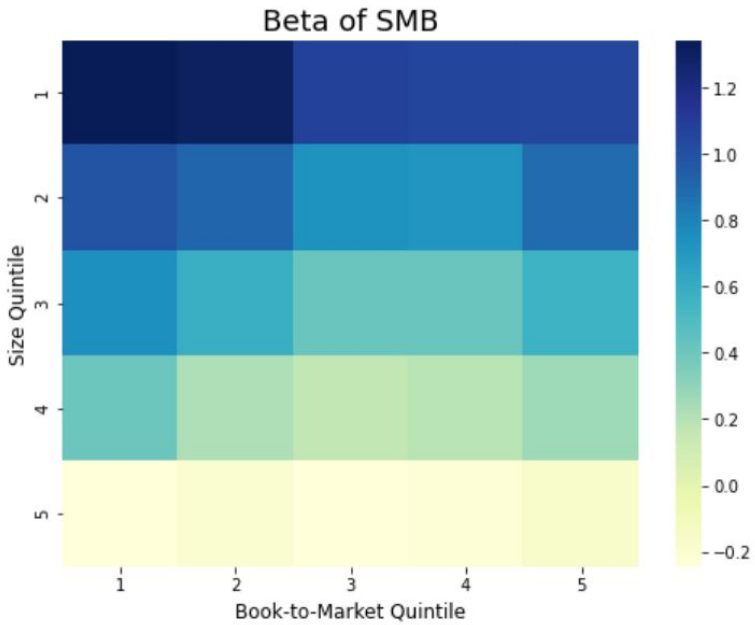
Fama-French Three Factor Model: An Improvement

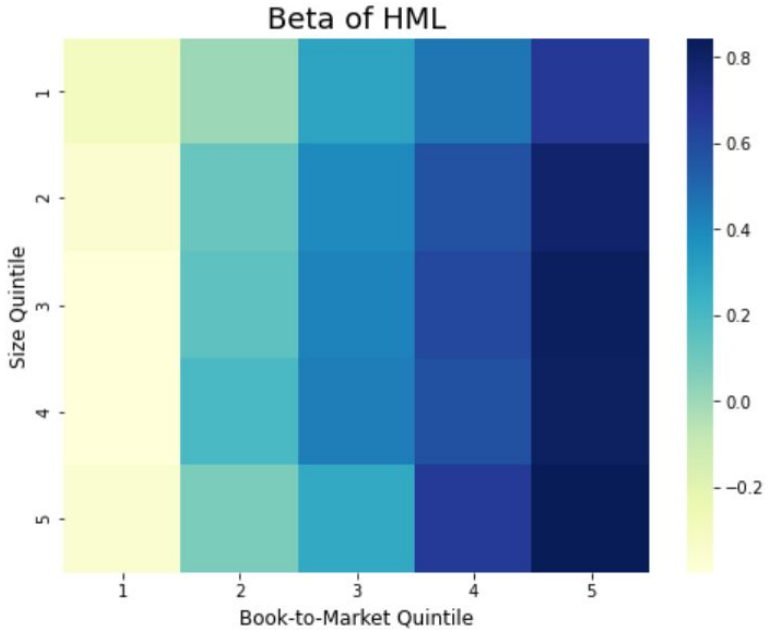
$$R_i - R_f = \alpha_i + \beta_1(R_M - R_f) + \beta_2 SMB + \beta_3 HML + \epsilon_i$$

Application:

- Test the explanatory power of FF 3-factor model
- Extrapolate the risk exposure and investment style of US mutual funds from their performance

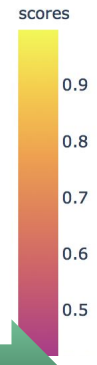
Explaining Portfolio Returns with SMB and HML factors

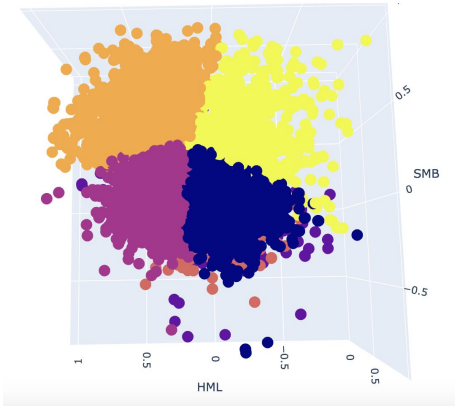


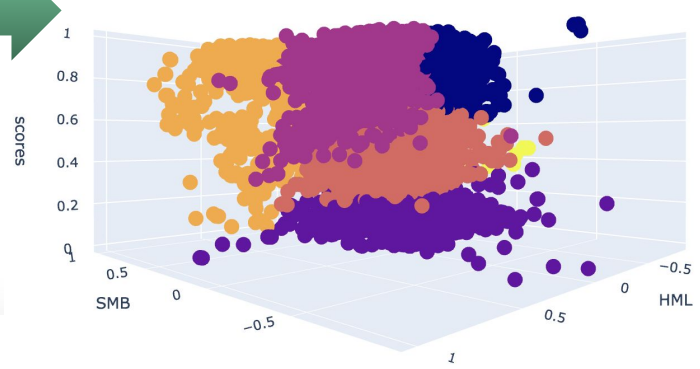


Data source: Kenneth French Data Library

Mutual Fund Performance





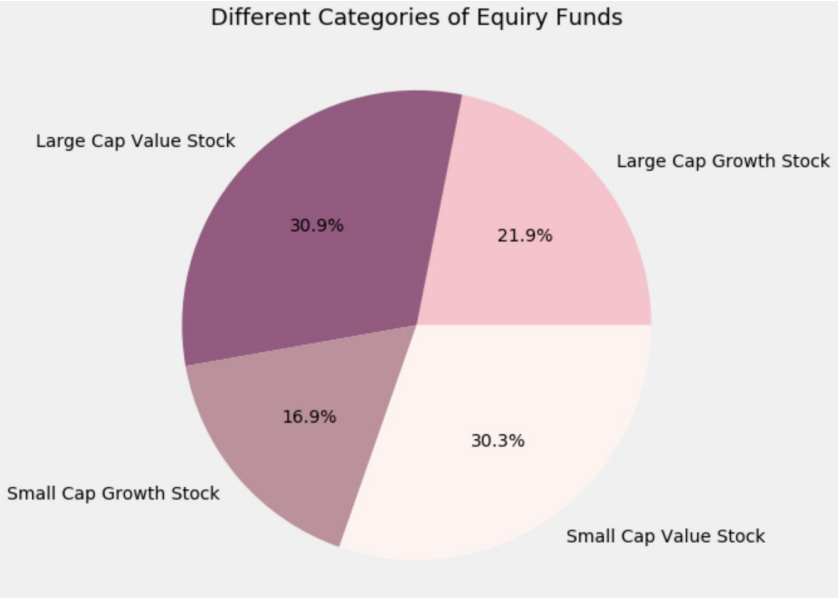


Data source: WRDS Mutual Fund Dataset

Implications: Investment Style and Asset Allocation

From the factor-based regression analysis, we provide an estimate of the categorization of all US mutual funds.

Mutual Fund Categories	Number of Mutual Funds	Average Return
Fixed Income Funds	13,901	4.89%
Equity Funds	19,896	6.64%*



Which gives rise to the equity premium puzzle