

Fama and French (1992) find that β of CAPM have very little information about average return. BE/ME seem to have strong predictability. They extend the asset-pricing tests in Fama and French (1992) in three ways.

- Expand the set of asset returns to be explained
- Expand the set of variables used to explain returns
- The approach to testing asset-pricing models is different. This paper uses time-series approach of Black, Jensen, and Scholes (1972)

For bond-market factors, DEF and TERM can not explain the size effect in average stock return. When the stock market factors are added to the regressions, the relation between size and DEF slopes disappears.

SMB $\rightarrow$ mimicking the common risk factor in return related to size.

HML $\rightarrow$ mimicking the common risk factor in return related to BE/ME

Hence, we have
$$E[R_{it}] - R_{ft} = \alpha + \beta_1(R_{mt} - R_{ft}) + \gamma_1 \text{SMB}_t + \gamma_2 \text{HML}_t + \epsilon_{it}$$

These factors can be used for selecting portfolios, evaluating portfolio performance, measuring abnormal return, and estimating cost of capital.

Regressing portfolio's past excess returns on the five explanatory returns, the regression slope can be used to estimate the expected return on the portfolio and can be used for evaluating the performance of portfolio. And intercept of regression can be used to judge whether our portfolio can beat the market.