QF600-G1-2-Asset Pricing

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Session 4

Linear Factor Models

Performance Measurement

`Risk_Factors.xlsx` contains monthly observations of the risk-free rate and the three Fama–French risk factors (expressed as percentages, but without "%"), over the ten-year period from Jan 2004 through Dec 2013.

Using excess returns for the ten industry portfolios, calculate the following performance metrics:

- Sharpe ratio
- Sortino ratio (using risk-free rate as target)
- Treynor ratio (using CAPM β)
- Jensen's α
- Three-factor α

The sample semi-variance can be estimated as:

$$\frac{1}{T}\sum_{t=1}^{T}\min\left\{R_{it}-R_{ft},0\right\}^2$$

where R_i is return on industry portfolio and R_f is risk-free rate.

- Create a table showing the performance metrics for the ten industry portfolios.
- Plot your results as a bar chart for each performance metric.
- Briefly explain the economic significance of each of the three performance ratios (but not α's).

Please submit all relevant results (including graphs and qualitative discussion of economic significance) as an Adobe PDF file to Homework 3 before the end of Sunday, 1 Oct 2023.

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Wikipedia: Fama–French Three-Factor Model

Link

Wikipedia: Sortino Ratio

Link

Lecture Notes: Linear Factor Models & Performance Measurement

PDF document

Risk Factors

Excel Spreadsheet