

Stat 222: Research Proposal

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Portfolio optimization for Fixed-income and Currency markets

1) Dataset

Main:

Bloomberg terminal (daily quotes)

Alternative:

Google Finance

<https://www.google.com/finance>

Bloomberg website

<http://www.bloomberg.com/markets/>

US Department of the Treasury

<http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield>

2) Research question

Find the optimal weighting for capital allocation in a portfolio with a universe of instruments in the following markets: Canadian and US fixed income, Currencies, Gold.

The main purpose of this work is to evaluate current methodologies for portfolio selection, identify the practical issues faced by each approach, and conclude with a recommended model for the current market situation.

In order to satisfy the above-mentioned goals, It is necessary to implement the existing models in a computational language (R / python), obtain the optimized portfolio composition, obtain the market value, returns and risk measures for different periods of time and selected financial scenarios. Finally, compare the performance among each strategy and the statistical significance of a dominant methodology.

3) List of figures and tables

Figures:

Historical return performance for existent methodologies

Historical risk measures for existent methodologies

Graphical representation of tested yield curve scenarios

Tables:

Return/risk comparison for each methodology

Historical

Scenario analysis

Covariance estimation between selected instruments

Optimal portfolio weights comparison for recent years

Portfolio weighting recommendation for current financial situation