

Project Topic: Comparative Strategic Asset Allocation for Insurance and Pension Funds

Our project will focus on developing and evaluating optimal long-term strategic asset allocations for a hypothetical Pension Fund, using different return and risk assumption frameworks. The goal is to compare how portfolio outcomes vary under alternative capital market assumptions and optimization techniques, and assess the robustness, diversification benefits, and risk-adjusted performance of each approach.

Specifically, we aim to:

1. Construct long-term capital market assumptions (LTCMAs) for major asset classes based on historical data, economic intuition, and literature. We will compare our assumptions and results against those published by institutions like JPMorgan, BlackRock, and Blackstone.
2. Build and compare strategic asset allocations using:
 - Traditional Mean-Variance Optimization (MVO)
 - Hierarchical Risk Parity (HRP)
 - Evolutionary Algorithms (EA)
3. Benchmark our allocations against model portfolios published by leading institutions to evaluate institutional alignment and identify potential innovation gaps.
4. Conduct sensitivity and stability analysis of portfolio outcomes across different assumptions and optimization methods.
5. Provide actionable takeaways for a CIO perspective, focusing on robustness, exposure to structural macro risks, and real-world implementability.

Initial Task Breakdown:

We think completing the project will involve the following steps:

- Define the investment universe (asset classes to include).
- Gather long-term historical data for returns, volatilities, and correlations.
- Form our LTCMA assumptions based on the data and judgment.
- Implement the 3 optimization frameworks (MVO, HRP, EA) in Python.
- Compare resulting allocations and performance metrics.
- Benchmark allocations vs institutional portfolios.
- Run sensitivity/stability analysis (e.g., varying assumptions).
- Summarize CIO-level insights and practical considerations.