

# 運用不同風險衡量模型建構投資組合

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## 摘要

投資組合最佳化問題即為找出投資組合最佳的資金配置，進而使得投資風險大幅降低並獲得更高的投資報酬。由於，風險為投資者最為關心的課題，許多學者亦提出了不同的風險衡量模型如：mean-variance、semi-variance、variance with skewness、mean absolute deviation、lower partial moment與two-sided模型。然而，各風險模型的優劣並未被詳細且完整的探討之。本研究運用GA方法結合六個風險模型於三個績效指標中，建立演化式資產配置模型。同時，根據文獻中學者們發展模型時運用的傳統線性求解方法，產生線性式資產配置模型，最後加入三個績效評比納入考量。使用移動式窗方法對不同的資料期間做測試，引用Treynor、Sharpe與Jensen等投資組合績效評估指標做綜合績效評估。結果顯示，本研究所提出的演化式模型與學者們的線性式模型對於投資組合資產配置，在過去訓練期間所最佳化出的資產配置，於未來測試期間短期內在Treynor、Sharpe與Jensen等投資績效指標綜合考量下，有一半的模型長期且穩定地優於台灣加權股價指數表現，更有三分之二的模型優於台灣五十指數的績效表現。不同風險模型與最佳化方法之間對於投資組合績效有著明顯的影響，投資者在建構投資組合時應慎選適當的風險衡量模型與最佳化方法以確保較佳的投資績效。

關鍵字：遺傳演算法、風險衡量、投資組合、績效評估指標

# Portfolio Asset Allocation Using Different Risk Measure Models

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## Abstract

The portfolio optimization problem is to look for optimal portfolio capital allocation, then making investment risk reduction and minimize the reward for investment. As a result of the risk is the issue investors most concerned about, many scholars have proposed different risk measurement models such as mean-variance, semi-variance, variance with skewness, mean absolute deviation, lower partial moment and two-sided models. However, the pros and cons of each risk measure model have not been investigated detailed and integrated. In this study, we establish evolutionary asset allocation models by using genetic algorithm combine six risk measure models with three performance evaluation indicators. Meanwhile, according to the linear methods in literatures, we establish linear asset allocation models. Last but not least, we take three benchmarks into account. Using sliding windows experimented with different data periods, and evaluated portfolio comprehensive by Treynor ratio, Sharpe ratio and Jensen's alpha. The empirical results indicate the half methods portfolio asset allocation performed better than TAIEX and FTSE TWSE Taiwan 50 index which investigated integrated in three performance evaluation indicators. Different optimization methods for allocation of portfolio asset doesn't have obvious difference, but different risk measure models which performance has more obvious difference when building portfolio. In other words, investors should be cautious choosing among the risk measure model to ensure better investment performance when construct of portfolio.

**Keywords** : Genetic algorithm; risk measurement; portfolio; performance evaluation indicators

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