

# 整筆投資與定期定額投資績效之比較— Sharpe Ratio、Sortino Ratio、Upside Potential Ratio 之應用

## Performance Comparisons between Lump Sum Investing and Dollar-Cost Averaging Strategies: The Application of Sharpe Ratio, Sortino Ratio, and Upside Potential Ratio

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## 摘要

本文之目的在檢測整筆投資與定期定額兩種投資策略的績效表現，採用 Sharpe Ratio、Sortino Ratio 與 Upside Potential Ratio 做為績效衡量指標。首先以模擬方式進行分析，發現不論股價成長率、股票報酬波動率與利率高低為何，整筆投資與定期定額的報酬率皆有顯著差異存在。此外，定期定額的標準差低於整筆投資，表示定期定額投資的總風險低於整筆投資。從成長率不同來看，整筆投資的報酬率與績效指標皆優於定期定額；只有當成長率很低時( $\mu = 2\%$ )，定期定額才優於整筆投資。就波動率不同來看，仍然以整筆投資的績效表現優於定期定額；只有當波動率很大時( $\sigma = 40\%$ )，採用定期定額方式長期投資之績效才會優於整筆投資。以利率不同來看，整筆投資的報酬率以及三個績效指標皆高於定期定額。接著，本文以台灣加權股價指數過去 25 年的實際資料進行分析，研究結果發現，整筆投資的報酬率雖然高於定期定額，但標準差也高於定期定額。在每一年至每四年獲利了結的情況下，三個績效指標均指出定期定額之績效表現優於整筆投資。不過，在每五年獲利了結的情形下，除了 Sharpe Ratio 支持定期定額外，Sortino Ratio 與 Upside Potential Ratio 則認為整筆投資優於定期定額。

**關鍵字：**整筆投資、定期定額、Sharpe Ratio、Sortino Ratio、Upside Potential Ratio

## ABSTRACT

The purpose of this paper is to compare the performance of the lump sum (LS) investing strategy and the dollar-cost averaging (DCA) strategy by using the Sharpe ratio, the Sortino ratio, and the Upside potential ratio. Firstly, this study uses the Monte Carlo simulation method to compare the performance of LS and DCA. The results indicate significant differences between the returns of LS and DCA with different growth rates, volatilities, and interest rates. Furthermore, the DCA strategy is exposed to the lower risk. For different growth rates, the returns and performance of LS are higher than those of DCA, except the lower growth rate of stock ( $\mu = 2\%$ ). For different volatilities, the performance of LS also beats DCA, except the higher volatility situation ( $\sigma = 40\%$ ). For different interest rates, the returns and performance of LS are superior to those of DCA. Next this study uses a 25-year historical price data of TAIEX to calculate the investment performance of the two strategies. The empirical results indicate that although the average return of the LS is higher than that of the DCA, the LS strategy is exposed to the higher risk. After risk-adjusting, we find that for the one-, two-, three-, and four-year period, the investment performance of DCA is superior to that of LS. But for the five-year period, the performance of LS is better than that of DCA by using Sortino ratio and Upside potential ratio.

**Keywords:** Lump sum investing, Dollar-cost averaging, Sharpe ratio, Sortino ratio, Upside potential ratio