

## 摘要

本研究以現金餘額計劃（Cash Balance Plan）及確定提撥退休金計劃（Defined Contribution Pension Plan）建構出公務人員退撫基金之建議機制，建構之主要目的在於透過第一層現金餘額計劃之利息給付機制降低退休基金利率風險，同時由第二層確定提撥計劃獲取額外退休所得，使雇主與員工在雙層式退休金計劃下，同時承擔投資風險，以降低基金利率風險並同時滿足適當退休所得保障。本文在現金餘額計劃不同控管年限及利息給付假設下，模擬超額積蓄（Overfunded）基金與不足額積蓄（Underfunded）基金執行資產負債管理（Asset Liability Management）所需存續期間，同時模擬雙層式退休金計劃提供員工之退休所得替代率，研究結果發現：

- 1、超額積蓄基金及不足額積蓄基金均可以在目前資本市場中找到符合所需存續期間之資產投資。在控管 20 年限內，超額積蓄基金所需存續期間在-1.71 年到 0.39 年之間；不足額積蓄基金所需存續期間在 4.68 年到 8.31 年之間。
- 2、退休基金越接近超額狀態越有利於資產負債管理。當基金積蓄狀態越接近超額積蓄時，基金負債與資產的比例較不足額積蓄基金低，故資產負債管理所需存續期間較短，對於基金能夠控管的年限也越長。
- 3、雇主可透過現金餘額計劃利息給付機制執行百分之百免疫策略。雇主可利用現金餘額計劃利息給付依據外部債券利率為參考依據的特性，鎖定債券利率，達到資產負債管理百分之百免疫效果。
- 4、現金餘額計劃執行百分之百免疫策略情況下，45 歲以下公務人員採行自動選擇投資基金（Default Fund）為高風險投資基金，自動選擇提撥率（Default Rate）為每月薪資 5.08% ，可使員工達到適當所得替代率保障水準。

關鍵字：現金餘額計劃、確定提撥退休金計劃、資產負債管理、所得替代率

## Abstract

This thesis proposes an new alternative two-tier pension composed of Cash Balance Plan (CBP ) and defined contribution pension plan to the traditional defined benefit pension plan of Taiwan Public Employee Retirement System(TPERS). In order to decrease the interest-rate risk of the pension fund and to provide additional retirement income protection, we utilize the credit rate mechanism of CBP and supplement CBP with additional defined contribution plan. We investigate the Asset-Liability Management (ALM) for TPERS and calculate the liability duration under different time horizons, interest credits of CBP. We also simulate the replacement rate of the two-tier pension plan under different contribution rates, and investment returns. The results are as follows:

- 1、 Given the twenty-year time horizons, the asset duration of overfunded plan ranges between -1.71 years and 0.39 years, whereas that of underfunded plan varies from 4.68 years to 8.31 years. In this case, the requirements of asset duration can be satisfied in the Taiwan Capital Market.
- 2、 The overfunded pension plan has higher probabilities to meet the requirements of asset duration. Therefore, we suggest that the fund manager can increase the asset allocation percentage of external fund management in order to improve the long-term returns.
- 3、 Perfect matching of pension fund can be achieved by matching the yield of securities to interest credit under CBP . In addition, we suggest that the interest credit of the new labor contracts should take the trend of the current interest rate into consideration.
- 4、 Replacement rates provided by CBP for woman range from 19.05% to 45.70% and from 20.86% to 50.05% for man assuming the interest credit rate is 5.2%. To increase the retirement income, the defined contribution plan provide additional replacement rate between 13.56% and 162.96% for woman and between 14.85% and 178.42% for man assuming the employee can contribute 3.08 percent to 13.37 percent of regular salaries

and investment returns are from 4 percent to 8 percent .

Keywords : Cash Balance Plan, Defined Contribution Plan, Asset Liability Management, Replacement Rate.