

摘要

銀行只要交易債券就會面臨不同的利率風險，利率風險是銀行的主要金融風險之一，由於影響利率變動的因素很多，利率變動更加難以預測，銀行日常管理的重點之一就是怎樣控制利率風險，因此，銀行如何防範和化解利率風險，有效地進行利率風險管理，是一個重大問題。

若能夠估計出風險值(VaR：Value-at-Risk)，就可以提列損失準備與資本達到控管風險的目的，而沒有損失分配就無法求得風險值，風險值為銀行風險量化的基本工具。

本論文研究將著重於如何如何配適債券之殖利率曲線，進而估算出投資債券所產生的損失分配，採用 Nelson and Siegel 的三因子及四因子模型來配適殖利率曲線，使用 Diebold-Li(2006)的方法估算出 Nelson and Siegel 模型之參數，並利用蒙地卡羅法模擬未來十天債券的損失分配，計算出其風險值，並與歷史模擬法做比較。

關鍵字：Nelson and Siegel 模型，利率風險，風險值

Abstract

The banks will be faced with a different interest rate risk as long as trading bonds, Interest rate risk is one of the bank's major financial risk, since there is lots of determinants of the interest rate variation, It is hard to forecast the interest rate variation, how to control interest rate risk is a important work for bank's day-to-day management, it is important that how to prevent and solve interest rate risk.

If we can estimate the VaR(Value at Risk), we can prepare the capital for the expected loss, but without loss function, we can't estimate the VaR, loss function is a basic tools for risk quantification.

The purpose of this paper is how to fit the yield curve, and estimate the loss for investing in bonds, we'll fit the yield curve by Nelson and Siegel's three factor model and four factor model, and estimate model's parameter by Diebold-Li(2006), then we simulate the bond's loss function, then calculate the VaR and compare with the Historical Simulation Method.

Keywords: Nelson and Siegel model, interest rate risk, Value at Risk