次貸風暴前後外匯匯率風險值之比較分析—以美元兌英鎊、歐元、日圓與新台幣為例

A Comparative Analysis of Foreign Exchange Rate on Value at Risk under Sub-Prime: Example of USD against GBP, EUR, JPY and NTD

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摘　要

本文旨在探討次貸風暴對外匯市場風險值(value at risk, VaR)提列，運用不同風險值模型包括歷史模擬法、蒙地卡羅模擬法、變異數—共變異數模擬法與 ARMA-GARCH 模擬法，計算美元兌英鎊、歐元、日元與新台幣在次貸風暴前後的風險值影響。經實證結果發現，ARMA-GARCH 法所估計之匯率最具保守性與準確性，穿透率與條件覆蓋檢定最佳；然而就效率性而言，以蒙地卡羅法所估計出的效率性最佳，可使匯率達到保守的估計。因此本文再以 ARMA-GARCH 法提列風險值發現，各匯率在次貸風暴後所需計提之風險值皆較次貸風暴前為多，其中以英鎊與日圓的風險值波動幅度與風險值提列幅度最大。

關鍵詞：次貸風暴、風險值、歷史模擬法、變異數-共變異數模擬法、蒙地卡羅模擬法、ARMA-GARCH 模擬法

Abstract

This study applies to the foreign exchange determination of value at risk under Sub-Prime, using different value at risk models such as historical simulation approach, Monte Carlo simulation approach, variance-covariance simulation approach and ARMA-GARCH simulation approach to calculate GBP, EUR, JPY and NTD against USD before and after Sub-Prime. The empirical result indicates that the ARMA-GARCH simulation approach estimates exchange rate conservatism, accuracy, violation rate with better conditional coverage test. For the efficiency, The Monte Carlo estimation performs the best with conservative exchange rate. In this study, we apply ARMA-GARCH again on value and risk determination. All currencies have more values and risks to be considered than before the crisis. Among them, both GBP and JPY have the biggest risk value on fluctuation rate and range.

Keywords: Sub-prime, Value at risk, Historical simulation approach, Monte carlo simulation approach, Variance-covariance simulation approach, ARMA-GARCH simulation approach.