

Empirical analysis of Credit VaR of listed corporate bonds in Taiwan

- CreditMetricsTM example

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Abstract

We use the corporate bonds of twelve kinds of industries in Taiwan to estimate the Credit Value at Risk (CVaR) by using CreditMetricsTM by J.P. Morgan, 1997. We stand on the credit transition matrix in Joint Credit Information Center (JCIC), one-year forward zero rates provided by Yang (2005), recovery rates proposed by Shen et al. (2003) and the correlation coefficients of twelve kinds of industries in this study to estimate the CVaR and conditional CVaR. Furthermore, we use different correlation coefficients and different recovery rates to observe CVaR and conditional CVaR fluctuations. The experimental results show that the correlation coefficient is most positively related to CVaR and conditional CVaR, and the recovery rate is most negatively related to CVaR and conditional CVaR. In the experimental results, we also find that if we adopt CVaR to examine risks, the credit risks will probably be underestimated.

Keywords: Credit Value at Risk, conditional Credit Value at Risk, CreditMetricsTM,

Recovery rate, Correlation coefficient.

台灣上市公司債之信用風險值實證分析

-以 CreditMetricsTM 為例

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摘要

我們使用 J.P. Morgan, 1997 所提出的 CreditMetricsTM 以台灣 12 種產業的公司債去估計信用風險值，其依據 JICI 的信用轉換矩陣、Yang (2005) 所提供的一年期遠期零息殖利率、Shen et al. (2003) 所提出的回收率以及本研究中的 12 種產業之相關係數來估計信風險值 (CVaR) 與條件式信用風險值 (conditional CVaR)。此外，我們使用不同的相關係數及不同的回收率來觀察信用風險值(CVaR)與條件式信用風險值(conditional CVaR)的變化。由實驗結果得知，相關係數和信用風險值(CVaR)與條件式信用風險值(conditional CVaR)大多呈現正向關係；而回收率和信用風險值(CVaR)與條件式信用風險值(conditional CVaR)大多呈現負向關係。在實驗結果裡，我們也發現如果採用信用風險值(CVaR)來衡量風險，則信用風險將可能有被低估。

關鍵字：信用風險值(CVaR)、條件式信用風險值(conditional CVaR) 、

CreditMetricsTM、回收率、相關係數。

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