

Accepted Manuscript

A limit distribution of credit portfolio losses with low default probabilities

Xiaojun Shi, Qihe Tang, Zhongyi Yuan

PII: S0167-6687(16)30452-8

DOI: <http://dx.doi.org/10.1016/j.insmatheco.2017.02.003>

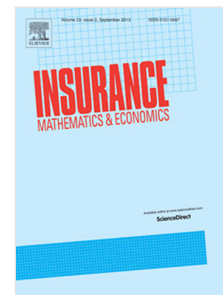
Reference: INSUMA 2324

To appear in: *Insurance: Mathematics and Economics*

Received date: November 2016

Revised date: January 2017

Accepted date: 3 February 2017



Please cite this article as: Shi, X., Tang, Q., Yuan, Z., A limit distribution of credit portfolio losses with low default probabilities. *Insurance: Mathematics and Economics* (2017), <http://dx.doi.org/10.1016/j.insmatheco.2017.02.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A Limit Distribution of Credit Portfolio Losses with Low Default Probabilities

Xiaojun Shi^[a], Qihe Tang^[b] and Zhongyi Yuan^{[c]*}

^[a] School of Finance, Renmin University of China

No. 59 Zhongguancun Street, Haidian District, Beijing 100872, P. R. China

Email: sxjstein@gmail.com

^[b] Department of Statistics and Actuarial Science, University of Iowa

241 Schaeffer Hall, Iowa City, IA 52242, USA

Email: qihe-tang@uiowa.edu

^[c] Department of Risk Management, The Pennsylvania State University

362 Business Building, University Park, PA 16802, USA

Email: zhongyi-yuan@psu.edu

January 31, 2017

Abstract

This paper employs a multivariate extreme value theory (EVT) approach to study the limit distribution of the loss of a general credit portfolio with low default probabilities. A latent variable model is employed to quantify the credit portfolio loss, where both heavy tails and tail dependence of the latent variables are realized via a multivariate regular variation (MRV) structure. An approximation formula to implement our main result numerically is obtained. Intensive simulation experiments are conducted, showing that this approximation formula is accurate for relatively small default probabilities, and that our approach is superior to a copula-based approach in reducing model risk.

JEL classification: G210; G320

Keywords: Credit portfolio loss; Extreme risk; Limit distribution; Loss given default; Model risk; Multivariate regular variation; Tail dependence

1 Introduction

Credit risk management, although long residing in the finance literature, has attracted much research attention in the insurance/actuarial community; some recent papers include Vandendorpe et al. (2008), Donnelly and Embrechts (2010), Tang and Yuan (2013), Bernardi et

*Corresponding author. Phone: 1-814-865-6211; fax: 1-814-865-6284

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات