

PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Statistics and Actuarial Science
Supervisors	Principal supervisor: Dr Jiajun Liu (XJTLU, Department of Statistics and Actuarial Science) Co-supervisor: Dr Yi Zhang (XJTLU, Department of Mathematical Science) Co-supervisor: Dr Fei Ma (XJTLU, Department of Applied Mathematics)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Measuring Tail contagion risk: An Asymptotic Approach
Contact	Please email jiajun.liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) with a subject line of the PhD project title

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Actuarial Science/Statistics/Applied Math but not limited to.

Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

Degree:

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program.

Funding:

The PhD studentship is available for three years subject to satisfactory progress by the student. The award covers tuition fees for three years (currently equivalent to RMB 80,000 per annum). The scholarship holder is expected to carry out the major part of his or her research at XJTLU in Suzhou, China. However, he or she is eligible for a research study visit to the University of Liverpool of up to three months, if this is required by the project.

Project Description:

Risk contagion has attracted increasing research attention in the current epoch of post financial crisis. This project contributes to quantitative risk management by modeling

extreme risk contagion and extreme financial risk in an integrated manner via EVT. A flexible risk contagion measure is proposed to tailor the incomparable pair of risks with extensive dependence structures. We generalize the model to allow for heavy-tailed distribution of insurance risk corresponding to the catastrophic losses in insurance market, which are equipped with a wide type of dependence structure. For various important cases, asymptotic formulas for the systematic RC are derived. This project provides an ideal framework for modeling both heavy tails and dependence. Intensive simulation experiments are conducted to compare the asymptotic formulas with empirical estimators.

In the wake of the financial crisis and collapse of Lehman Brother and AIG, risk contagion, considered as the risk of collapse of an entire financial system as a result of the financial distress on another financial system, has been widely used to explain the recent financial turmoils for insurance/actuarial and financial industries. This research area is of particular relevant to insurers who play a significant role in the economy as suppliers of protection against financial and economic risks. After the global financial crisis of 2007 to 2009, many macro-prudential policies have been promoted by regulatory bodies in the insurance industry. A list of global systemically important insurers were published by the Financial Stability Board (FSB) who intends to carry out special policy measures for these institutions by January 2019. In the same direction, the US regulatory reform, known as the Dodd-Frank Act, imposed a new form of regulation on non-bank holding companies (including insurance companies), who were considered as "Systemically Important Financial Institutions". Risk contagion and reform proposals have led academics to focus on the great extent to evaluate the financial distress of a system as a result of the failure of any other system.

The goal of this project to provide a measure of risk contagion with extreme losses under dependence that is both model-based and practically relevant. Our research will develop new methods that can contribute to a better understanding of how the insurance/financial system works and a better ability to quantify risk contagion. It lies in finding ways to create a hybrid model to estimate the systemic impacts according to an extreme risk. We aim to provide asymptotic results of the systemic risk as well as the systemic risk contagion with heavy-tailed losses in extreme regions, which are relevant to a large array of financial institutions, particularly insurance companies. An immediate application of result is to apply stress testing for such institutions, which is very much in the spirit of our risk contagion measure since it aims at estimating the capital shortfall in a potential future failure. The models and theories in our research also design to help policy makers to have a better understanding and then protect against debilitating financial crisis in the insurance/financial market.

For more information about doctoral scholarship and PhD programme at Xi'an Jiaotong-Liverpool University (XJTLU): Please visit

<http://www.xjtlu.edu.cn/en/study-with-us/admissions/entry-requirements>

<http://www.xjtlu.edu.cn/en/admissions/phd/feesscholarships.html>

How to Apply:

Interested applicants are advised to email jiajun.liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two reference letters with company/university letterhead
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of 6.5 or above)
- Verified school transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available

Informal enquiries may be addressed to Dr. Jiajun Liu (jiajun.liu@xjtlu.edu.cn), whose personal profile is linked below,

<https://www.xjtlu.edu.cn/en/departments/academic-departments/mathematical-sciences/staff/jiajun-liu>