PhD studentship   (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Mathematical Science
Supervisors	Principle supervisor: Dr Jiajun Liu (XJTLU, Department of Mathematical Science) Co-supervisor: Dr Yi Zhang (UoL, Department of Mathematical Science) External Advisor: Prof Yiqing Chen (Drake University, U.S.)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	A Multifaceted Study of Quantitative Risk Management: Interplay of Dependent Insurance and Financial Risks. 量化风险管理：相依的保险和金融风险的相互影响
Contact	Please email jiajun.liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) and copy doctoralstudies@xjtlu.edu.cn 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, Financial Mathematics/Financial engineering and risk management, Statistics and Probability, Mathematical Science or closely related Statistical Data Analytic area. Ideally, a successful candidate might have the Knowledge of writing own code for data analysis in MATLAB, R or equivalent. Evidence of good spoken and written English is essential. We are looking for mature, highly-motivated individuals with excellent analytical, problem solving and verbal skills. 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) and provides a monthly stipend of 3500 RMB as a contribution to living expenses. It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. It is a condition of the award that holders of XJTLU PhD scholarships carry out 300-500

hours of teaching assistance work per year. 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:

In actuarial science, it is well known that modelling extreme events and rare risks are very important. As the rapid growth of Catastrophe events, it became extremely urgent to quantify probabilities of large losses, and for helping risk management systems to control such rare risks. Moreover, with a rapid growth of insurance and investment products, a great deal of complexity to the valuation of financial firms is introduced, in which careful and thorough assessment of dependent risks is crucial to the development of sophisticated tools for dynamic financial analysis. Insightful research has been carried out in recent years due to the significance of this topic. In this project, extreme risks modelling with dependent risks will be proposed and analyzed.

The importance of modelling extreme risks has been well acknowledged in the area of actuarial science. The prevalence of rare events such as earthquake, flood, windstorm, or terrorism which are accompanied by disastrous economic and social consequence is the so-called Black-Swan phenomenon that make today's world far different from decades ago. In recent years, some frequent occurrences of catastrophes include: the 2008 Sichuan Earthquake in China which costs over $148 billion, the 2008 financial crisis that directly result in the 2008-2012 global recession, the 2010 Haiti Earthquake with estimated cost between $7.2-13.2 billion, 2011 Japan Earthquake, Tsunami and Nuclear Crisis with loss over $14.5-34.6 billion and world Banks estimated economic cost over $235 billion, the 2013 Typhoon Haiyan with damage over $1.5 billion. These catastrophes can lead to extremely large insurance and financial losses, which can be followed by ruin of insurance industries or bankruptcy of financial institutions that are suffering such losses. These natural or man-made catastrophes, which make extreme losses or outliers" in statistical data, are rare events which make them particularly difficult to prognosticate. These extremes and risks have increased awareness of the need to quantify probabilities of large losses, and for helping risk management systems to control such rare events.

Considering the grim consequences of extreme events, we carry out analysis of dependent risks in finance and insurance in this project. It is important to realize that extreme losses and risks are controlled by the same economic factors (such as global, national or regional economic growth), or affected by a common external event (such as flood, windstorm, forest fire, earthquake or terrorism). Moreover, a strong dependence among the losses can tend to make the losses jointly large. For example, properties may be damaged in a hurricane, resulting in large claims to an insurer, while they tend to be destroyed all together causes even more concern to the insurer. In extreme risk analysis, it is of particular significance to model both large individual losses and the dependence among them.

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

http://www.xjtlu.edu.cn/en/admissions/phd/entry-requirements.html

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

PhD Outline:

The research will also explore:

- Heavy-tailed distributions in Insurance, Finance, and Quantitative Risk Management.
- Dependent risks and extremes in Insurance and Finance.
- Asymptotic analysis of Ruin Probability.
- Extreme Value Theory in Insurance and Finance.

How to Apply:

Interested applicants are advised to email…....@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)

Informal enquiries may be addressed to Dr. Jiajun Liu   (jiajun.liu@xjtlu.edu.cn), whose personal profile is linked below,
https://sites.google.com/site/jiajunliushomepage/