



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

LIHUA LI

Department of Statistics
The University of Chicago

**A Nonparametric Estimation of An Upper Bound of
Ruin Probability Under High Claims**

THURSDAY, November 14, 2013, at 9:00 AM

110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

The paper is focused on the ruin probability under large claims which is well described by heavy-tailed distributions so that Lundberg's exponential bound does not hold. We start with pareto upper bound introduced by Willmot, and then use nonparametric approach to estimate such a bound and get its asymptotic confidence intervals. However, noticing the fact that unless the sample size is large, the asymptotic confidence intervals would perform poorly because of the actual distribution's asymmetry and non-normality, which is confirmed by our simulation study. Bootstrap confidence intervals are also studied, the comparison between these two methods demonstrates that bootstrap confidence intervals behave generally better than asymptotic intervals. At the end, we apply the theory to a real-world case and get a reasonable upper bound of ruin probability.

For information about building access for persons with disabilities, please contact Matt Johnston at 773.702-0541 or send an email to mhj@galton.uchicago.edu. If you wish to subscribe to our email list, please visit the following web site: <https://lists.uchicago.edu/web/arc/statseminars>.