

Bowles Symposium 2018: Pensions, Mortality and Interest Rate

Time: November 9, 2018 (Friday)

Place: CEAR Seminar Room (11th floor), Robinson College of Business at Georgia State University

Schedule:

November 9 (Friday)	
08 : 00am – –09 : 00am :	Breakfast in CEAR seminar room (11th floor)
09 : 00am – –10 : 30am :	Dr. Wai Sum Chan Session Chair: Dr. Liang Peng
10 : 30am – –12 : 00am :	Dr. Catherine Donnelly Session Chair: Dr. Fangda Liu
12 : 15pm – –13 : 45pm :	Lunch (11th floor)
14 : 00pm – –15 : 30pm :	Dr. Yijia Lin Session Chair: Dr. Samuel Cox
15 : 30pm – –17 : 00pm :	Dr. David McCarthy Session Chair: Dr. Liang Peng
18 : 30pm – –21 : 00pm :	Dinner at Ellis Hotel Speech by RMI Chair: Dr. Ajay Subramanian

Talks:

- *Speaker:* Dr. Wai Sum Chan, The Chinese University of Hong Kong

Title: Stochastic Mortality Models with Applications in Asia

Abstract: In the first part of the talk I discuss quantification and management of longevity risk in China. As the pension/annuity market in China develops, the Chinese insurance industry is increasingly exposed to longevity risk. The recently introduced China Risk Oriented Solvency System (C-ROSS) requires both domestic and foreign insurers operating in China have to hold solvency risk capital for the longevity risk they take. In this talk, we examine how the longevity risk facing insurers operating in China can be quantified using stochastic mortality models that are developed to suit the demographic situation in China. We also study how different longevity risk management solutions such as securitization may reduce an insurers C-ROSS solvency capital. The second part of the talk presents recent developments in the determination of personal injury claims in various jurisdictions in Asia (Hong Kong, Singapore, China, Taiwan, Malaysia and Japan). We will explore how insurance companies in this region can react to such developments and how academic actuaries, with knowledge of stochastic mortality modeling, can contribute in this area over time.

Biography: Dr. Chan graduated from the Chinese University of Hong Kong with a major in Accounting and a minor in Statistics. He pursued a doctorate in Applied Statistics at the Fox

School of Business Management, Temple University (Philadelphia, USA), receiving his PhD in 1989. He qualified as a Fellow of the Society of Actuaries in 1995 and was conferred an Honorary Fellow by the Institute and Faculty of Actuaries in 2014. He has been a Fellow of the Royal Statistical Society since 1990. Dr Chan held teaching and research posts at the National University of Singapore, the University of Waterloo and the University of Hong Kong before his present appointment as Professor of Finance at the Chinese University of Hong Kong. Dr Chan's research interests include Health Care Financing, Actuarial Modeling and Financial Econometrics. He has had over 100 scientific articles published in scholarly journals. Dr Chan has been teaching financial and actuarial courses since 1992. He currently serves as a co-editor of the North American Actuarial Journal.

- *Speaker:* Dr. Catherine Donnelly, Heriot-Watt University

Title: Modern Tontines: What Are They? Are They Useful?

Abstract: Modern tontines offer retirees the opportunity for a life-long, reasonable income. They can make cost-efficient use of pension savings. While this can also be done in a life annuity, the annuitant is generally forced to buy the guarantees implicit in a life annuity contract. In contracts, tontines can be structured with and without guarantees.

We show some methods of structuring tontines. The different methods have implications for the flexibility and choice for the members of the tontine. For one type of tontine, we present some recent, theoretical results on how much you should invest in it.

This talk is based on joint work with Thomas Bernhardt, Montserrat Guillen, Jens Perch Nielsen and John Young.

Biography: After her undergraduate degree at the University of Cambridge, Catherine Donnelly worked for several years in the pensions industry in the U.K. in both pensions and investment consultancy roles. She returned to university to do a Masters degree at the University of Oxford, followed by a PhD at the University of Waterloo, Canada. After a couple of years as a postdoctoral researcher at RiskLab, ETH Zurich, Switzerland, she took up a lecturing position at Heriot-Watt in 2011. Her current research interests are to propose and analyse ways in which a group of people can share their risks, with a focus on sharing their investment and mortality risks. She has been an editor of the ASTIN Bulletin since January 2018.

- *Speaker:* Dr Yijia Lin, University of Nebraska-Lincoln

Title: To Buyout or Not to Buyout?

Abstract: In recent years, defined benefit (DB) plan sponsors have sought to reduce pension risk through strategies such as buyouts that involve the purchase of annuities from insurance companies. While pension buyouts can generally help employers reduce pension liabilities and related expenses and improve firm performance, little attention has been paid to the implications

of pension risk transfer for employees. To fill this gap, we compare the total risks of employees with and without pension buyouts based on a model calibrated to market data in a stochastic framework. Our numerical examples show that the extent to which a buyout will affect the welfare of employees greatly depends on the financial soundness of their employer, plan funding status, PBGC maximum guarantees and state guarantee association protection limits. Our findings provide important insights for regulators and policymakers concerning best practices for pension de-risking through buyouts.

Biography: Dr. Yijia Lin earned her Ph.D. from Georgia State University, her B.A. and M.A. from Beijing Technology and Business University, and has a Chartered Financial Analyst professional designation. She joined CBA in 2007 and her research interests include risk management, insurance and longevity/mortality securitization. Dr. Lin has published papers in the Journal of Risk and Insurance, the North American Actuarial Journal, the Insurance: Mathematics and Economics, the Journal of Management and others. She is also a Co-Editor of the Journal of Risk and Insurance and a Co-Editor of the North American Actuarial Journal. Dr. Lin won the Harold D. Skipper Best Paper Award from the Asia-Pacific Risk and Insurance Association in 2006, the Ernst Meyer Prize for University Research Work from the Geneva Association in 2007, the Annual Prize for the Best Paper Published in 2007 from the North American Actuarial Journal in 2009, the Brockett-Shapiro Actuarial Journal Award from the American Risk and Insurance Association in 2014, the Robert I. Mehr Award for a literature contribution having a ten-year impact in the field of risk management and insurance from the American Risk and Insurance Association in 2015, and the Early Career Scholarly Achievement Award from the American Risk and Insurance Association in 2016.

- *Speaker:* Dr. David McCarthy, University of Georgia

Title: The Effect of Longevity Risk On The Sustainability & Inter-generational Equity of Public And Private Transfer Systems

Abstract: Three main systems intermediate transfers between generations: public transfer systems (including pension, health-care, social care & other public expenditure), private transfer systems (inter- and intra-household transfers, bequests) and capital markets (residential housing, funded private pension plans, and other saving). Generational Wealth Accounts (GWA, McCarthy et al 2018) extend the Generational Accounting (GA) framework of Auerbach, Kotlikoff & Gokhale to provide a single integrated framework incorporating all three of these systems. We use a stochastic mortality model in conjunction with the GWA to assess the implications of longevity risk for the sustainability & inter-generational equity of these three transfer systems in the US.

Biography: Dr. McCarthy have had a varied career in academia, industry and government. Before completing his PhD at the Wharton School of the University of Pennsylvania, he worked

as an actuarial trainee in a large life insurance company in his native South Africa. Subsequently, he worked in academia at Oxford University and Imperial College London, where he started and ran an actuarial MSc program. Before joining Terry College of Business at UGA, he took a sabbatical from academia to advise the National Treasury of South Africa on financial sector regulation, public-sector pensions and retirement reform. This varied background has given him a unique and informed perspective on issues of national and international importance related to population aging, retirement provision and financial sector regulation. His academic work focuses on inter-generational transfers and risk sharing, the analysis of mortality risks, annuities, financial sector regulation and retirement system design and operation. He is a Fellow of the Faculty of Actuaries, Edinburgh, UK.

Participants:

- *Speakers:*
 - Dr. Wai Sum Chan, The Chinese University of Hong Kong (chanws@cuhk.edu.hk)
 - Dr. Catherine Donnelly, Heriot-Watt University (c.donnelly@hw.ac.uk)
 - Dr. Yijia Lin, University of Nebraska-Lincoln (yijialin@unl.edu)
 - Dr. David McCarthy, University of Georgia (dmccarth@uga.edu)
- *GSU Faculty:* Jeff Qin (gqin@gsu.edu); Liang Peng (lpeng@gsu.edu); David Buechner (dbuechner@gsu.edu); Yichuan Zhao (yichuan@gsu.edu); Harold Weston (hweston@gsu.edu); Fangda Liu (fliu15@gsu.edu); Sam Cox (samcox@gsu.edu); Haci Akcin (hakcin1@gsu.edu)
- *Others:* Andrew Golub (agolub@beechercarlson.com); Weimin Liu (wliu18@student.gsu.edu); Qianlong Liu (qliu11@gsu.edu); Qihui Su (suqh0810@outlook.com); Chen Ling (cling5@gsu.edu); Haitao Huang (hhuang10@student.gsu.edu); Seul Ki Kang (skang43@gsu.edu); Carlos Nunez (ca.nuneztrujillo@gmail.com); Wanggefei Wu (wwu8@student.gsu.edu); Kai-Ting Chan (kchan11@student.gsu.edu); Meiqi Lyu (mlyu1@student.gsu.edu); Cathlyn Yong (syong1@student.gsu.edu); Wenhui Wang (wwang31@student.gsu.edu); Juan Camilo Palacio Orozco (capalacio6@gmail.com); Pei-Wen Hao (phao1@student.gsu.edu); Yingying Li (yli90@student.gsu.edu); Ronghao Wang (rwang17@student.gsu.edu); Ya-Han Chang (ychang22@student.gsu.edu); Tsung-Wei Chen (tchen25@student.gsu.edu); Jeong Hyun Lee (jlee328@student.gsu.edu); Cameron Lee Cowen (ccowen1@student.gsu.edu)

Location: The workshop will be held in the CEAR Seminar Room, which is located on the 11th floor of the J. Mack Robinson College of Business at Georgia State University. The physical address

is 35 Broad Street NW, 11th Floor, Atlanta, GA 30303. Please use the street level entrance on Broad Street.

Directions: i) MARTA Subway: 35 Broad Street is located 1 block northwest of the Five Points Marta Rail Station in Downtown Atlanta; the station is located at the intersection of all metro lines. One-way Rail Ride costs \$2.50, and multiple-day passes are also available for purchase. Tickets can be easily purchased from vending machines at all MARTA stations. This is by far the easiest method, and is on a direct line to Atlanta International Airport.

ii) Driving: From Interstate 75/85 (the connector) going NORTH take exit 248B for Edgewood Ave toward Auburn Ave / J W Dobbs Ave. Turn left at Edgewood Ave SE and proceed 0.6 miles. Turn left onto Park Pl. SE / Pryor St. SE. At the FIRST cross street, turn right onto Decatur St. SE. Continue onto Marietta St. NW. The next intersection is Broad St. and is where our facility is located. There is no street parking available nearby; however, there are pay lots and garages nearby. Costs range from \$5 to \$10 depending on the lot/garage used.

From Interstate 75/85 (the connector) going SOUTH take exit 248D for J W Dobbs Ave toward Jesse Hill Dr. Use the right lane to keep right at the fork and stay on Exit 248D. Turn right onto John Wesley Dobbs Ave NE, and proceed for 0.2 miles. Turn left onto Courtland St. NE, and continue for 0.2 miles. Turn right onto Edgewood Ave SE and proceed 0.3 miles. Turn left onto Park Pl. SE / Pryor St. SE. At the FIRST cross street, turn right onto Decatur St. SE. Continue onto Marietta St. NW. The next intersection is Broad St. and where our facility is located. There is no street parking available nearby; however, there are pay lots and garages nearby. Costs range from \$5 to \$10 depending on the lot/garage used.

Parking (one option): There is covered, pay for parking at Lanier Public Parking lot located at 150 Carnegie Way; Atlanta, GA 30303. The lot is about 5 blocks away from the workshop site at 35 Broad Street.

Lodging: The Ellis Hotel is walking distance to workshop. The Ellis's information: 176 Peachtree Street Northwest, Atlanta, GA 30303; Phone: (404) 523-5155; Website: www.ellishotel.com