JUAN ZHANG

Curriculum vitae

Department of Risk, Insurance, and Healthcare Management
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EDUCATION

Temple University (Fox School of Business), Philadelphia, PA
Ph.D., Risk Management and Insurance, 2020 (expected)

- Dissertation Title: *Essays on Reserving and Accounting Conservatism*
- Advisor: Martin F. Grace

Central University of Finance and Economics, Beijing, China
M.S., Insurance, 2015

Central University of Finance and Economics, Beijing, China
B.S., Logistics Management, 2013

RESEARCH AND TEACHING INTERESTS

Research Interests: Insurance Accounting, Insurance Economics, Public Policy Analysis, Behavioral Insurance
Teaching Interests: Risk Management and Insurance, Actuarial Science, Risk Analytics, Finance

RESEARCH

Refereed Journal Articles

1. Zhou, Hua and Juan Zhang, 2017, "Reform of Solvency Regulation Regime and Cost Efficiency of Nonlife Insurance Companies—Based on Chinese Nonlife Insurance Market Data," *Journal of Financial Research (a Chinese academic journal)* 4: 128-142.

2. Zhou, Hua and Juan Zhang, 2014, "A Comparative Analysis on the Risk-Free Interest Rate Model in China's Second-Generation Solvency Regime—Based on Solvency II Interest Rate Model and the Current Method," *Insurance Studies (a Chinese academic journal)* 5: 87-98.

Working Papers

1. Accounting Conservatism in the Property-Liability Insurance Industry, with J. David Cummins and Mary A. Weiss, 2019.
2. Conditional Conservatism and Insolvency Risk, 2019.
3. Tort Reform and Physician Moral Hazard, 2019.
4. Disentangling Adverse Selection and Moral Hazard: Evidence from China's Auto Insurance Market, with Hua Zhou, 2019.
5. Marijuana De-regulation and Automobile Accidents: Evidence from Auto Insurance, with Cameron M. Ellis, Martin F. Grace, and Rhet Smith, 2019.

AWARDS AND HONORS

2019, Huebner Doctoral Colloquium Scholar, S.S. Huebner Foundation
2019, Spencer Doctoral Candidate Scholarship, Spencer Educational Foundation
2018, Second Place of the 8th Annual Ph.D. Student Research Competition, Fox School of Business
2016, First Place of the 6th Annual Ph.D. Student Research Competition, Fox School of Business
2016-2018, Kyobo Life Travel Grant, Asia-Pacific Risk and Insurance Association

CONFERENCES

Papers Presented

2019, Simon Conference for Young Researchers in RMI, East Lansing, MI
2019, Huebner Foundation Doctoral Colloquium, San Francisco, CA
2019, American Risk and Insurance Association Annual Meeting, San Francisco, CA
2018, American Risk and Insurance Association Annual Meeting, Chicago, IL
2018, Asia-Pacific Risk and Insurance Association Annual Meeting, Singapore
2017, Asia-Pacific Risk and Insurance Association Annual Meeting, Poznan, Poland
2016, Asia-Pacific Risk and Insurance Association Annual Meeting, Chengdu, China

Discussant

2019, Risk Theory Society Annual Seminar, Tuscaloosa, AL
2019, Ph.D. Student Symposium at the University of Georgia, Athens, GA

TEACHING EXPERIENCE

Teaching Assistant
Fox School of Business, Temple University

Introduction to Risk Management (undergraduate level)	Fall 2018, Spring 2019, Summer 2019
Risk Analytics (undergraduate level)	Fall 2019

ACTUARIAL CREDENTIAL

Associate of the Society of Actuaries (ASA, *in progress*)

- Exams Passed: P (10/10), FM (10/10), C (9/10), MLC, MFE, SRM (waived), VEE (Economics, Mathematical Statistics)
- Exams in Progress: FAP modules, VEE (Accounting and Finance)

PROFESSIONAL AFFILIATIONS

Risk Theory Society (2019)
American Risk and Insurance Association (2018)
Asia-Pacific Risk and Insurance Association (2016)

PROGRAMMING EXPERIENCE

Stata, R, SAS, *LaTeX*

REFERENCES

Martin F. Grace, Ph.D. (*Advisor*)
Harry Cochran Professor, Temple University
Regents' Professor Emeritus, Georgia State University
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ABSTRACTS OF WORKING PAPERS

"Accounting Conservatism in the Property-Liability Insurance Industry" (with J. David Cummins and Mary A. Weiss)

In this paper, we study two types of accounting conservatism in the P&L insurance industry – e*x-ante* conservatism and *ex-post* conservatism. Ex-ante conservatism means that firms over-report liabilities at the beginning regardless of any information. In contrast, ex-post conservatism means that firms over-report liabilities during accrual development in response to expected future loss shocks. Firms can use ex-ante and ex-post conservatism strategically to achieve different goals. Ex-ante conservatism mainly works as a cushion against future losses, while ex-post conservatism can reduce the information asymmetry between the firm and outside parties since it provides timely loss information in the financial report. In this paper, we study whether ex-post conservatism significantly exists in the property-liability (P&L) insurance industry and how the strategy interacts with other managerial incentives, including ex-ante conservatism, income smoothing, financial strength, and taxation. One benefit of studying the P&L insurance industry is that we can track the development of loss reserves for ten years, which are the most significant accruals in this industry. Thereby, we can separate the timeline of accrual development into two parts and use the reserve estimate in the first development year to measure ex-ante conservatism and the reserve estimates afterward (in the development years two through ten) to measure ex-post conservatism. Ex-ante conservatism is simply a positive bias in the initially reported incurred losses. The measure of ex-post conservatism is a regression coefficient that reflects the asymmetric timeliness of incurred losses in responding to good and bad news. We study all U.S. domiciled P&L insurance companies from 1993 to 2015. Our results show that P&L insurers, on average, significantly engage in ex-post conservatism. The usage of ex-ante conservatism can constrain the level of ex-post conservatism, but the marginal effect is decreasing because the two types of conservatism serve for different purposes. Income smoothing incentive also restrains the level of ex-post conservatism, but financial strength incentive promotes it. Finally, we find some empirical evidence of the opportunity cost of ex-post conservatism -- insurers tend to reserve more than needed when they accrue future expected losses early.

"Conditional Conservatism and Insolvency Risk"

Accounting conservatism can be unconditional (ex-ante) or conditional (ex-post). Unconditional conservatism refers to the overstatement of liabilities regardless of news, whereas conditional conservatism means that firms use lower verification standards to report future losses than gains. Unlike unconditional conservatism that mainly creates a cushion against future losses, conditional conservatism provides timely information about bad news in the financial report. In this paper, we focus on conditional conservatism and investigate whether it can reduce the insolvency risk of the property-liability insurance companies. Due to its informational role, conditional conservatism may alleviate the tension between insurers and regulators (and rating agencies); hence, conditional conservatism may decrease the probability of insurers receiving regulatory action or being under-graded. The P&L insurance industry is a perfect industry for studying accruals because we can track the development of accruals of specific insurance policies for ten years. The data enable us to develop a new measure of conditional conservatism, which is the concavity of the loss development curve. The new measure can explore both time-series and cross-sectional variations in conditional conservatism and is independent of an insurer's initial reserving strategy. Through empirical regressions, we find that conditional conservatism is associated with a higher financial strength rating and a lower probability of insurers being deemed financially impaired.

"Tort Reform and Physician Moral Hazard"

States have been enacting tort reforms to reduce the liability imposed on physicians who are found liable for malpractice. However, tort reform may create a moral hazard as physicians may take less care due to their reduced liability. This paper investigates whether physician moral hazard exists after tort reform. We study this problem through the lens of medical malpractice insurers who, as the primary payer of medical malpractice claims, have the data and ability to predict the behavioral changes of physicians. We reveal the managerial revision of loss reserves after tort reform through the full information reserve error (FIRE), which is the incurred losses reported after tort reform minus the prediction of the actuarial model using data on incurred losses before tort reform. In addition to physician moral hazard, the revision of loss reserves (FIRE) is also affected by the reduced likelihood of a patient to file a claim and the reduced severity of reported payment, both of which have a loss-reducing effect. Using a diff-in-diff model, we find that the insurers adjust their loss reserves upward after the caps on punitive damages, a higher evidence rule requirement of punitive damages, and the reform to joint and several liability rules. The results indicate that for these three types of tort reform, physician moral hazard offsets the other two loss-reducing effects and increases the insurers' expected losses. The existence of physician moral hazard demonstrates that tort reform may reduce the deterrence effect of the law and hurt patient welfare.

"Disentangling Adverse Selection and Moral Hazard: Evidence from China's Auto Insurance Market" (with Hua Zhou)

Adverse selection and moral hazard are different types of information asymmetry in the insurance market, but their empirical evidence cannot be separated using the traditional positive risk-coverage correlation test. In this paper, we use a new method to disentangle adverse selection and moral hazard, which is to test for the correlation between the past and the current claim numbers under experience rating. We conduct the test on auto insurance data obtained from a large Chinese domestic insurer from 2010-2013. We expect that the serial correlation of claim numbers should be *negative* under moral hazard but *positive* under adverse selection. The experience-based rating system can incentivize drivers to take more precautions after a claim occurs through a premium increase, which can reduce the number of claims in the next period. However, drivers with high risk should have a consistently high number of claims over time because their risk type does not change dramatically over a short period. Our empirical result shows a negative correlation between the past and the current claim numbers, indicating that moral hazard is more critical than adverse selection in China's auto insurance market. Besides, the negative coefficient has a larger magnitude for drivers whose no-claim discount rate is higher since these drivers would face a higher premium increase after a claim. We further examine the design of insurance products in this market to investigate why moral hazard is significant. We find that the option of waiving coinsurance liability is underpriced so that over 90 percent of drivers in the sample choose to buy full insurance. Hence, we propose that the regulators should have less stringent regulations on product design and pricing.

"Marijuana De-regulation and Automobile Accidents: Evidence from Auto Insurance" (with Cameron M. Ellis, Martin F. Grace, and Rhet Smith)

The legal status of marijuana has transformed radically over the past two decades. Prior to 1996, marijuana was illegal across the country. Then, California started a trend that has seen marijuana legalized for medical purposes in 34 states and additionally for recreational purposes in 9 of those. While the public benefits of legalizing marijuana are well-documented, much of the potential public detriment remains under-studied. We focus on one potential detriment -- the effect of marijuana legalization on automobile safety. Experimental studies show that marijuana negatively impacts driving ability. Given this, it is natural to assume that increasing access to marijuana would lead to an increase in car accidents, but the reality is unclear. Alcohol, by itself, is more detrimental to driving than the use of marijuana by itself. If marijuana and alcohol are substitutes, then lowering the absolute price of marijuana could lead people away from alcohol. Even with an increase in marijuana-related accidents, the total number of accidents could be reduced. We examine this question through the effect on the auto insurance market using localized, at the zip-code level, data on auto insurance premiums. We find that the legalization of medical marijuana leads to a decrease in auto insurance premiums of $5.20 per policy per year. This effect is stronger in areas close to a dispensary. We find limited evidence that the reduction is due to a decrease in drunk driving prior to legalization.