

# Byungdoong Kong

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## RESEARCH INTERESTS

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Stochastic control and games; mathematical finance; actuarial science.

## EDUCATION

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- **University of California, Santa Barbara** *Sep. 2024 – Present*  
Santa Barbara, CA, USA  
*Ph.D. in Statistics and Applied Probability*
  - Advisor: Prof. Ruimeng Hu
- **Sungkyunkwan University** *Feb. 2024*  
Seoul, Korea  
*M.Sc. in Actuarial Science*
  - Advisor: Prof. Hangsuck Lee
- **Sungkyunkwan University** *Feb. 2022*  
Seoul, Korea  
*B.Sc. in Mathematics*

## WORKING PAPERS

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- [1] **Endogenous reinsurance pricing in large competitive insurance markets: Finite-player and mean-field analysis** (with R. Hu). *Working paper*, 2026.

## PUBLICATIONS

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- [9] **Valuing American strangle options via double barrier first-touch digitals** (with H. Lee, M. Lee, and H. Ha). *Applied Economics*, 1–21, 2026.
- [8] **A first-touch approach to American option valuation with piecewise linear boundaries** (with H. Lee, M. Lee, and H. Ha). *Finance Research Letters*, 98, 109843, 2026.
- [7] **Age-specific multi-stage OLG model for PAYG pension schemes** (with H. Lee, J. Hong, and S. Y. Jeong). *Computational Economics*, 67(3), 1463–1510, 2026.
- [6] **Two-asset double barrier options** (with H. Lee, H. Ha, and G. Lee). *Computational Economics*, 66(2), 1071–1106, 2025.
- [5] **Multi-step double barrier options under time-varying interest rates** (with H. Lee, Y. Kye, and S. Song). *The North American Journal of Economics and Finance*, 76, 102372, 2025.
- [4] **Foreign equity lookback options with partial monitoring** (with H. Lee and H. Ha). *Finance Research Letters*, 67, 105726, 2024.
- [3] **Valuing three-asset barrier options and autocallable products via exit probabilities of Brownian bridge** (with H. Lee, H. Ha, and M. Lee). *The North American Journal of Economics and Finance*, 73, 102174, 2024.
- [2] **Pricing first-touch digitals with a multi-step double boundary and American barrier options** (with H. Lee and H. Ha). *Finance Research Letters*, 59, 104699, 2024.
- [1] **Pricing multi-step double barrier options by the efficient non-crossing probability** (with H. Lee, H. Ha, and M. Lee). *Finance Research Letters*, 54, 103772, 2023.

## PRESENTATIONS

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- [5] **Finite-player and mean-field Stackelberg reinsurance-investment games with relative performance and common noise**, The 10th Asian Quantitative Finance Conference (AQFC 2026), Pohang, Korea, July 2026.
- [4] **Finite-player and mean-field Stackelberg–Nash equilibria in reinsurance-investment games**, The 29th International Congress on Insurance: Mathematics and Economics (IME 2026), Seoul, Korea, June 2026.
- [3] **Optimal early surrender value and surrender penalty rate for variable annuities**, 2023 Winter Conference of Korean Insurance Academic Society, Busan, Korea, Feb. 2024.
- [2] **Multi-step double barrier rebate options**, 2023 Korea Insurance Joint Conference, Cheonan, Korea, Aug. 2023.
- [1] **Valuation of two-asset double barrier products**, 2023 Spring Conference of Korea Risk Management Society, Seoul, Korea, Mar. 2023.

## FELLOWSHIPS, GRANTS, AND AWARDS

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- **Graduate Student Travel Grant** *June 2026*  
*Department of Statistics and Applied Probability, UC Santa Barbara, USA*
- **Korea Life Insurance Association Overseas PhD Fellowship** *Sep. 2025 – Present*  
*Korea Life Insurance Association, Korea*
- **Brain Korea 21 Plus Research Encouragement Scholarship** *Mar. 2023*  
*Ministry of Education, Science and Technology, Korea*
- **Brain Korea 21 Plus Fellowship** *Mar. 2022 – Feb. 2024*  
*Ministry of Education, Science and Technology, Korea*
- **Recommendation Scholarship** *Sep. 2021*  
*Sungkyunkwan University, Korea*
- **Student Success Scholarship** *Mar. 2020*  
*Sungkyunkwan University, Korea*

## TEACHING AND RESEARCH EXPERIENCE

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- **University of California, Santa Barbara** *Sep. 2024 – Present*  
*Teaching Assistant*  
*Santa Barbara, CA, USA*
  - PSTAT 120A, 120B, and 120C (Probability and Statistics)
  - PSTAT 171 (Mathematics of Fixed Income Markets)
  - PSTAT 172A (Actuarial Statistics); PSTAT 173 (Risk Theory)
- **Korea National Open University** *Aug. 2023 – Dec. 2023*  
*Teaching Assistant*  
*Seoul, Korea*
  - AI in Finance
- **Institute of Basic Science, Sungkyunkwan University** *May 2023 – Aug. 2023*  
*Research Assistant*  
*Seoul, Korea*
  - Derived exit-probability formulas for a 3D Brownian bridge.
  - Implemented an algorithm to estimate exit probabilities of a 3D Brownian motion.
- **Sungkyunkwan University** *Mar. 2022 – Feb. 2023*  
*Teaching Assistant*  
*Seoul, Korea*
  - GEDB001 (Calculus 1); GEDB003 (Linear Algebra)

## CERTIFICATIONS

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- **Associate of the Society of Actuaries (ASA), in progress**, Society of Actuaries *Present*
  - Passed Exams and Modules: P, FM, IFM, FAM-L, SRM, STAM, PAF, ASF, FAP.
  - VEEs: Economics; Accounting and Finance; Mathematical Statistics.
- **Financial Risk Manager (FRM) Exam Part I**, Global Association of Risk Professionals *May 2022*
- **Certified Financial Risk Manager**, Korea Financial Investment Association *Sep. 2021*
- **Certified Investment Manager**, Korea Financial Investment Association *Feb. 2021*
- **Advanced Data Analytics Semi-Professional**, Korea Data Agency *Dec. 2020*

## LANGUAGES AND TECHNICAL SKILLS

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- **Languages:** Korean (Native), English (Fluent), Chinese (Intermediate).
- **Programming languages:** Python, R, MATLAB, Mathematica, L<sup>A</sup>T<sub>E</sub>X.