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ACADEMIC SEMINAR SERIES

AI Inside the Firm: Function-Level Adoption and Operating Outcomes in Insurance

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English

Abstract: Firms invest heavily in AI capability, yet how they use AI within the organization to support production remains less understood. We construct the first function-level database of insurers' investment in AI-skilled workers using 3.4 million job postings by U.S. insurers from 2010 to 2026. We first use a fine-tuned large language model (LLM) to identify AI-related job postings, then combine topic modeling with LLM analysis to identify the business functions these jobs support. Using this database, we explore three questions: where insurers use AI, how AI affects outcomes in the functions that adopt it, and whether AI replaces non-AI jobs. We find AI hiring is widespread: 58% of insurers posting jobs in 2025 advertised at least one AI position, and AI postings grew approximately twelvefold over the past decade. AI hiring spans both cross-functional activities, such as data science and machine learning, and core insurance functions, including actuarial and pricing, customer service, underwriting, and claims. Second, among property-casualty insurers, acquisition labor costs fall following the first underwriting-AI hire, and insurance loss ratios fall following the first claims-AI hire, particularly in personal auto and homeowners insurance. Following catastrophes, insurers with more claims AI also settle claims faster and gain market share in affected markets. Third, we find mixed evidence that AI hiring replaces non-AI hiring: it appears to replace non-AI hiring in some functions but complement it in others. These patterns suggest that firms use AI both to automate work and to augment human expertise, depending on the business function.



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Jingshu Luo, Ph.D., is an Assistant Professor of Finance and the Holder of the Liberto-King Professorship in Insurance at the University of Mississippi. Dr. Luo earned a Ph.D. in Risk Management and Insurance from Temple University. She was named the first National Association of Insurance Commissioners (NAIC) Research Fellow in 2021. Her research interests include Insurance Economics and Regulation, Healthcare Finance, and Health Information Technology. She has published in journals such as the Journal of Risk and Insurance, North American Actuarial Journal, and Journal of Real Estate Finance and Economics.

ALL ARE WELCOME

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