

RICHENG PIAO

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AREAS OF INTEREST

- Teaching: Macroeconomic, Microeconomic, Game Theory, Health Economics, Statistics, Econometrics, Applied Data Analytics, Industrial Organization.
 - Research: Applying econometric models and machine learning techniques to public policy, industrial organization, and applied economics.
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EDUCATION

- **Northeastern University, Boston, MA**
Ph.D. in Industrial Organization in Economics
Graduation Date: August 2021
 - **University at Albany, State University of New York, Albany, NY**
B.S. in Economics (Honors Program)
B.S. in Mathematics
Graduation Date: May 2012
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TEACHING EXPERIENCE

Assistant Teaching Professor, Department of Economics, Northeastern University, Boston, MA

Principles of Macroeconomics 2017 – Present

- Delivered comprehensive lectures on core macroeconomic topics, including GDP, inflation, unemployment, and business cycles, using real-world data and current events. Analyzed historical and contemporary economic crises, including the Great Depression, oil crises, dot-com bubble, 2008 financial crisis, and the pandemic, providing students with a deeper understanding of their causes and impacts.
- Emphasized experiential learning through group projects analyzing data from the World Bank, focusing on RGDP per capita, unemployment rates, inflation, labor force participation, savings, investment, and net capital outflow. Guided students in presenting findings and facilitated discussions to identify commonalities and outliers across groups, synthesizing insights for class-wide understanding.
- Incorporated the latest post-pandemic economic policies, such as the IORB rate, to enhance relevance and engagement. Fostered critical thinking by encouraging students to connect macroeconomic theories with practical applications and contemporary economic challenges.

Information Economics & Game Theory

2020 – Present

- Designed and delivered an engaging curriculum exploring strategic interactions in economics, politics, and business, integrating theoretical foundations with practical applications.
- Emphasized experiential learning by facilitated interactive learning through in-class games, case studies, and analysis of real-life scenarios, fostering a deeper understanding of concepts such as Nash Equilibria, Evolutionary Game Theory, Repeated interaction, and Asymmetric Information in an inclusive and dynamic class environment.
- Introduced systematic research methodologies, encouraging students to connect game-theoretic principles to potential research topics.
- Guided students in solving game equilibria, analyzing strategic behavior, and applying these insights across interdisciplinary contexts.

Applied Data Analytics in Economics

2025 Spring

- Developed and taught a hands-on course emphasizing practical data analytics skills using tools like Excel, Python, R, SQL, and Generative AI.
- Guided students through scraping, cleaning, and analyzing public datasets from sources such as BLS, BEA, and FRED, fostering real-world data proficiency.
- Covered advanced topics including causal inference techniques (DiD, IV, RDD), demand estimation models (Logit, BLP), and machine learning methods (decision trees, K-means, DBSCAN).
- Integrated Generative AI tools to enhance coding efficiency and creativity, helping students accelerate project workflows.
- Aligned the course structure with experiential learning principles, preparing economics students for data-driven career opportunities.

Principles of Microeconomics

2019 – Present

- Delivered engaging lectures on foundational microeconomic concepts, such as supply and demand, elasticity, market structures, and externalities, using real-life examples and case studies to enhance experiential learning.
- Designed and implemented mini-projects to provide hands-on learning experiences, such as estimating price elasticity using CPI and CES data in Python Jupyter Notebook.
- Guided students conducting fieldwork to explore market structures in identifying competitive items, assessing market competitiveness, and presenting findings in online discussions and written reports.
- Emphasized real-world application by integrating current economic events, such as technological advancements and policy shifts, into lectures and projects.
- Fostered collaboration and critical thinking by encouraging students to analyze and discuss findings from fieldwork and mini-projects, enhancing their understanding of economic principles and decision-making.

Microeconomic Theory

2023 – Present

- Provided advanced instruction in microeconomic theory, covering topics such as utility maximization, demand theory, cost minimization, market equilibrium, and strategic decision-making through mathematical formalism and optimization techniques.
- Explored market imperfections, including public goods, externalities, information asymmetry, and imperfect competition, with an emphasis on policy implications and interventions.
- Integrated advanced topics like game theory, behavioral economics, and industrial organization to deepen theoretical understanding and practical applications.
- Conducted problem-solving exercises, economic modeling, and real-world case studies to enhance quantitative and analytical skills.
- Designed experiential learning activities, including projects where students apply optimization techniques to analyze real-world economic scenarios, bridging the gap between theory and practice.

Applied Econometrics

Summer 2023

- Delivered advanced econometric instruction focusing on regression analysis, causal inference, time series analysis, and panel data methods.
- Provided students with opportunities to apply econometric techniques using real-world datasets from sources like the BLS and FRED, fostering practical analytical skills.
- Encouraged the integration of econometric theory with applied analysis through research projects and case studies addressing contemporary economic issues.

Applied Statistics for Economics

Fall 2022

- Taught statistical methods and their applications in business and economics, including probability distributions, hypothesis testing, regression analysis, and data visualization techniques.
- Emphasized the use of statistical software, such as Python and Excel, to analyze real-world datasets and interpret results in a decision-making context.
- Designed hands-on projects where students collected, analyzed, and presented data to solve business and economic problems.

Money and Banking

2016 – 2017

- Taught key concepts in monetary economics, including the structure of financial markets, the role of central banks, and the impact of monetary policy on the economy.
- Analyzed real-world financial events, such as the 2008 financial crisis and post-crisis monetary policies, to contextualize theoretical concepts.
- Facilitated student projects that explored topics like interest rates, inflation targeting, and financial stability, emphasizing the practical implications of monetary theory and policy.

RESEARCH INTERESTS

- Investigating the impact of AI-driven pricing tools on equilibrium prices across various market settings, exploring implications for market efficiency and competition.

- Combining machine learning and econometrics to enhance empirical analysis, with a focus on developing methodologies that integrate the strengths of both approaches.
 - Exploring the application of advanced machine learning tools to econometric models, improving predictive accuracy and policy analysis.
 - Examining how community funding platforms influence intellectual property law, analyzing whether they act as complements or substitutes to traditional IP frameworks.
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CURRENT RESEARCH

The New Age of Collusion? An Empirical Study into Airbnb's Pricing Dynamics

- Explores how algorithmic pricing on Airbnb influences host strategies and market competition, using ML methods to cluster different hosts and combining them with Fuzzy Regression Discontinuity Design (FRDD) to analyze causal effects. Findings reveal potential shifts towards coordinated pricing, offering insights into regulating digital marketplaces.

Can Community Funding Replace Intellectual Property for Creative Sustainability?

- Examines whether platforms like Patreon can replace IP laws. Using a repeated game-theoretic framework, the study shows that as patronage and social norms grow, reliance on IP laws decreases, fostering a more sustainable creative economy.

DISSERTATION

"Quality, Variety, and Welfare: The U.S. Smartphone Market"

"Fuel Prices, Federal Tax Credits, and Welfare: A Case of the Electric Automobile Industry"

SKILLS

- **Technical Expertise:** Python (Pandas, NumPy, Scikit-learn, BeautifulSoup), R (ggplot2, caret, glmnet), SQL, Stata, Jupyter Notebook, GitHub, Tableau, and AWS.
 - **Language Proficiency:** Native in Chinese and Korean; Fluent in English.
 - **Educational Tools:** Experienced in creating interactive polls, data visualization, and developing analytics projects for classroom use. Proficient with Canvas, LaTeX, Canva, PollEverywhere, and high-level presentation skills; adept at developing and organizing classroom projects
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HONORS AND AWARDS

- **IBM Data Science Professional Certificate** (2021): Applied machine learning solutions to VR games in the Applied Data Science Capstone.
- **Ph.D. Fellowship**, Northeastern University (2012 – 2021): Recognized for academic excellence and research potential.
- **Gordon Karp Award**, University at Albany (May 2012): Awarded for outstanding academic achievement in Economics.
- **Dean's List**, University at Albany (2009 – 2012).

REFERENCES

- **Dr. James Dana (Committee Chair)**
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- **Dr. Robert Triest**
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- **Dr. Michael P. Stone**
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