

KUNYAO (RICHARD) XU

Email: RichardXu@gwu.edu
Webpage: elliott.gwu.edu/richard-xu
LinkedIn: [linkedin.com/in/richard-xu-econ/](https://www.linkedin.com/in/richard-xu-econ/)

EDUCATION	George Washington University Ph.D. in Economics (expected)	August 2019 - May 2027
	Miami University M.A. in Economics, M.S. in Statistics	August 2017 - May 2019
	Miami University B.S. in Quantitative Economics, Mathematics and Statistics	August 2014 - May 2017
REFERENCES	Avi Dor Professor Department of Economics and Health Policy George Washington University avidor@gwu.edu	Ben Williams Associate Professor Department of Economics George Washington University bdwilliams@gwu.edu
	Alessandra Fenizia Assistant Professor Department of Economics George Washington University afenizia@gwu.edu	Cyrus Rustomjee Assistant Director Strategy, Policy and Review Department International Monetary Fund CRustomjee@imf.org
RESEARCH INTERESTS	Applied Econometrics (Causal Inference), Health Economics, Natural Language Processing (NLP), Large Language Models (LLMs), Big Data, Machine Learning (ML), Artificial Intelligence (AI)	
TECHNOLOGY SKILLS	R, Python, Tableau, AWS, Hadoop, Spark, SQL, Git, SAS, Stata, Matlab, Mathematica	
PUBLICATIONS	“Correlates of Pretransplant Outcomes in United States Kidney Transplant Programs, 2015 to 2020” (with Xingxing Cheng, et al; <i>Kidney International Reports</i> , vol. 11, no. 7, no. 106570, July 2026)	
	“The Medical Costs of Determining Eligibility and Waiting for a Kidney Transplantation” (with Avi Dor, et al; <i>Medical Care</i> , vol. 62, no. 8, 2024, pp. 521–29)	
ECONOMIC POLICY REPORTS	“IEO Evaluation Report: The Evolving Application of the IMF’s Mandate (2024)” (contributed to the background paper on “Sentiment Analysis of External Stakeholders”)	
	“IEO Evaluation Report: The IMF’s Exceptional Access Policy (2024)” (contributed to the background paper on “Sentiment Analysis of Public Perception”)	

WORKING PAPERS

“Expectation Sentiment and Consumption Fluctuation from the Covid Era: A Natural Language Processing Approach” (*Job Market Paper*)

Abstract: This paper explores fluctuations in consumer spending during the COVID-19 pandemic, focusing on the role of consumer expectations amid income reductions and heightened uncertainty. Leveraging daily transaction data and sentiment indices derived from 1.2 million U.S. news articles, the study constructs topic-specific sentiment measures to gauge shifts in public expectations. Using a regression discontinuity design centered on Pfizer’s vaccine announcement, the analysis reveals a 3.2% overall increase in spending, driven primarily by grocery and food delivery sectors. Subsequent Vector Autoregressive (VAR) analysis highlights the influence of public health expectations on spending for essential goods, while recreational spending remains largely unaffected. The results also uncover divergent patterns between income groups, with high-income consumers responding more to income expectations and low-income consumers reacting to unemployment expectations. These findings underscore the critical role of expectation sentiment in shaping consumption behavior during periods of crisis.

“Leveraging ChatGPT to Analyze Heterogeneous Treatment Effects: The Effect of Pfizer’s COVID-19 Vaccine Announcement on U.S. Consumption” (*Accepted to the 2025 IAAE and PEA Conferences*)

Abstract: Traditional analyses of heterogeneous treatment effects often rely on pre-specified, structured numerical baseline indicators to test for significant differences in treatment effects across groups. This paper introduces a novel framework that utilizes word embeddings generated from ChatGPT’s textual outputs to identify factors driving significant heterogeneous treatment effects. Applying this approach within a regression discontinuity in time design, we examine the key determinants influencing the impact of Pfizer’s announcement of 90% efficacy for its first COVID-19 vaccine on weekly consumption patterns across U.S. cities during the pandemic’s first year. The announcement boosted public confidence in future economic conditions, thereby influencing current spending behavior. Our findings indicate that cities with high population density, elevated income levels, and weaker healthcare infrastructure experienced significantly stronger positive impacts. This study demonstrates the potential of combining innovative AI tools, such as ChatGPT, with textual information to advance causal inference methods in applied econometrics.

“Balancing Act: A Multi-Stakeholder Analysis of IMF Perceptions Using LLMs” (*Proposal submitted to the 17th Annual Conference of PEIO*)

Abstract: This paper investigates how diverse stakeholders perceived the IMF’s 2018 Exceptional Access Program (EAP) in Argentina, with the aim of understanding how such perceptions influence policy outcomes and program effectiveness. Leveraging recent advances in natural language processing, the study applies large language models (LLMs) to perform multilingual sentiment analysis across a range of sources, capturing views from domestic publics, national authorities, and international investors. To uncover the drivers of these sentiments, the paper employs topic modeling to identify key themes shaping narratives around the IMF and the broader economic context. By addressing three core questions—how stakeholders perceive the economy and the IMF, what incentives shape these perceptions, and how these perceptions influence policy outcomes—the study offers a novel framework for evaluating IMF engagement in crisis contexts. Through rigorous data filtering and methodological controls for bias and multiple comparisons, the paper provides one of the first large-scale, LLM-based analyses of multi-stakeholder sentiment toward an IMF program. Findings will contribute to a deeper understanding of the political economy dynamics that underpin IMF-supported reforms, with broader implications for global financial governance and stakeholder-informed policy design.

EMPLOYMENT	<i>Lecturer (Part-time Faculty)</i> Elliott School of International Affairs, GWU	August 2022 - Present Washington, DC
	<i>Research Officer</i> International Monetary Fund	March 2024 - November 2024 Washington, DC
	<i>Ph.D. Intern</i> International Monetary Fund	June 2023 - January 2024 Washington, DC
	<i>Ph.D. Intern (Macro-Finance)</i> China International Capital Corporation (CICC) - Global Institute	August 2022 - March 2023 Remote
	<i>Data Science (NLP, ML/AI) Intern</i> Nationwide Mutual Insurance Company	June 2020 - August 2020 Remote
	<i>Data Science (Bayesian) Intern</i> Nationwide Mutual Insurance Company	May 2019 - August 2019 Columbus, OH
TEACHING EXPERIENCE	Statistical Programming (<i>Master, Instructor</i>), George Washington University (Spring 2020, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024)	
	Health Economics Research (<i>Doctoral, Teaching Assistant</i>), George Washington University (Fall 2021, Fall 2022, Fall 2023, Fall 2024)	
	Health Economics and Finance (<i>Master, Co-Instructor</i>), George Washington University (Summer 2021, Summer 2022, Summer 2023)	
	Healthcare Payments, Systems, and Delivery Models (<i>Doctoral, Teaching Assistant</i>), George Washington University (Spring 2022, Spring 2023, Spring 2024, Spring 2025)	
	Business Statistics (<i>Undergraduate, Instructor</i>), Miami University (Fall 2017, Spring 2018)	
RESEARCH GRANTS	R01, R03 National Institute of Health, PhD Researcher (2023, 2024)	
	R01 Agency for Healthcare Research and Quality, PhD Researcher (2020) Research Innovation Award, Milken Institute School of Public Health, PhD Researcher (2022)	
HONORS AND AWARDS	Future of Financial Information Conference Travel Grant (INSEAD, France 2025)	
	George Washington University Graduate Student Travel Grant (IAAE, PEA 2025) National Association for Business Economics Scholarship (Washington, DC 2024)	
PROFESSIONAL SERVICES	AI Economics Program Member, GW Center for Economic Research (2025-present)	
	H.O. Stekler Research Program Member, George Washington University (2022-present)	
	Appointments, Promotions, & Tenure Committee Administrative Assistant, Department of Health Policy and Management, George Washington University (2021-present) Research Specialist, Milken Institute School of Public Health (2020-present)	
	Member for: <i>American Economic Association, American Statistical Association, The Econometric Society, International Association for Applied Econometrics, National Association for Business Economics, Pennsylvania Economic Association</i>	
	Referee for: <i>BMC Public Health, Health Economics Review, Social Science & Medicine</i>	

PRESENTATIONS	2025: International Association for Applied Econometrics Conference (Turin, Italy), Pennsylvania Economic Association Conference (Reading, PA), George Washington University Job Market Symposium (Washington, DC) 2024: International Monetary Fund (Washington, DC) 2022: CICC Global Institute (Virtual) 2021: 92nd International Atlantic Economic Conference (Virtual)
CERTIFICATES	Leadership Principles (Amazon 2025) Strategic Negotiation & Influencing Skills (IMF & CMPartners 2024) Macroeconomic Diagnostics (IMF 2024) Financial Programming and Policies (IMF 2024) Debt Sustainability and Debt Management (IMF 2024) Certificate in Machine Learning (National Association for Business Economics 2024) Certificate in National Economic Measurement (National Association for Business Economics 2023) Exchange Rate Economics (IMF 2023) GIS for Quantitative Spatial Data Analysis (London Business School 2023) Graduate Teaching Assistantship Program (George Washington University 2020) Data Manipulation in R (DataCamp 2019) Completion of Humans as Subjects IRB Course (CITI 2018) Level 9 (Highest) Saxophone Performance Certificate (China Conservatory of Music 2006)
NON-ECONOMICS WRITING	“Analyzing the Impact of the Creative Communities of Care Art Program on Quality of Life in Kentucky Nursing Homes” (2019) “Liu Yi - Zheng’s Discussion on the Principles and Methods of History Research of the Traditional Chinese Historiography” (with Guoli Xu; <i>Historical Research in Anhui</i> (2015)) “Reconstruction of the Family Genealogy and Biographical Records Lost During WWII and the Chinese Civil War (1931–1949)” (2014)
OTHER INFORMATION	Languages: English (fluent), Chinese (native)