Noormah Rizwan

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Economist with over 6 years of applied research experience in development economics and macroeconomic modeling, specializing in econometric analysis, panel and time series data methods, and policy evaluation. Proven skills in data gathering, literature review, and drafting research outputs. Experienced in translating technical findings into actionable policy advice for government and development stakeholders. Focused on climate resilience, resource economics, and economic development issues in Asia.

Research Experience

Research Assistant, Michigan State University — August 2021 - Present

- Employed GIS and spatial economics tools to process large-scale satellite data on crop choices, yields, irrigation status and weather variability.
- Used two-way fixed effects estimation to identify drivers of crop yield variability and forecast responses under alternative climate scenarios.
- Developed discrete choice models to simulate farmers' adaptation via crop selection and irrigation adoption under climate change, and estimated the welfare impacts of farmers' adaptation.
- Integrated irrigation adoption models with SWAT+ hydrological simulations to forecast water demand and inform climate-resilient infrastructure and water policy planning in Eastern Europe.
- Conceived and led a project on the welfare effects of informal tanker water markets amid unreliable piped supply in urban Pakistan.
- Designed a novel survey instrument to capture household water purchasing behavior, complemented by a short questionnaire for tanker operators.
- Collaborated with urban water market experts and recruited, trained, and supervised a field team in data collection protocols, digital data entry, and validation.
- Developing a structural, discrete-continuous model grounded in utility theory to estimate household demand and conduct counterfactual analyses to assess the welfare impacts of alternative water policies in low-income urban settings.

Research Analyst, International Food Policy Research Institute — July 2019 - July 2021

- Developed and applied Social Accounting Matrix (SAM) and Computable General Equilibrium (CGE) model to evaluate the economic and environmental impacts of solar-powered irrigation and groundwater depletion in Balochistan, Pakistan.
- Utilized CGE modeling to assess policy trade-offs and inform government decisions on sustainable energy and water resource management.
- Engaged with key stakeholders, including government agencies and farmers, to develop a policy paper advising the Balochistan government on the feasibility of transitioning to solar-powered tube wells.

Program Assistant, Punjab Commission on the Status of Women October 2018 - January 2019

- Developed statistical models to identify risk factors for spousal and non-spousal violence and produce a policy brief on gender-based violence in Punjab, Pakistan.
- Organized International Women Conference, 2018.

Intern, Macroeconomic and Finance Division, UN Economic and Social Commission for Asia-Pacific — October 2017 - January 2018

- Co-authored a policy brief investigating the slowdown of investment in Asia Pacific region, by employing dynamic statistical model using Difference Generalized Method of Moments (GMM) on data gathered on 29 countries in the region.

Education & Awards

- **Michigan State University** 2021 – Exp. May, 2026
  PhD, Agricultural, Food & Resource Economics
- **Georgetown University** 2016 – 2017
  MA, Applied Economics *(Fulbright Scholar)*
- **Lahore University of Management Sciences** 2011 – 2015
  BSc (Hons), Economics *(Graduated with Distinction)*
- **Allan Schmid Fellowship**, Michigan State University 2024
- **Short-term Research Grant**, American Institute of Pakistan Studies 2024

Publications & Working Papers

1. Rizwan, N., Jahali, J., Sears, M., Woznicki, S., Liu, T., Marko, O., Radulović, M. "Irrigation Adoption in a Changing Landscape: A Combined Economic and Hydrological Approach." *Under review, Water Resources Research - Agrohydrological Processes Under Global Change, Manuscript# 2025WR041530*
2. Rizwan, N., Sears, M., Woznicki, S., Marko, O. "Weathering the Change: Modeling Crop Choices in Response to Climate Variability." Working paper in preparation.
3. Rizwan, N., Sears, J. "Can the 'Water Mafia' Be Good? Evidence from Karachi's Residential Water Market." Working paper in preparation.
4. Rizwan, N., Shikoh, S. H., Davies, S., Moeen, M. S., Rana, A. W., & Haider, Z. "Assessing the Economic Cost of Depleting Groundwater in Balochistan: A Social Accounting Matrix (SAM) Multiplier Approach." *IFPRI Discussion Paper* (2021). https://ssrn.com/abstract=3822513
5. Moeen, M. S., Haider, Z., Shikoh, S. H., Rizwan, N., Ejaz, A., Davies, S., & Rana, A. W. "Estimating the Economic Impacts of the First Wave of COVID-19 in Pakistan using a SAM Multiplier Model." *IFPRI Discussion Paper* (2021). https://ssrn.com/abstract=3787013
6. Rana, A. W., Davies, S., Moeen, M. S., Shikoh, S. H., & Rizwan, N. "Solarization of Electric Tube-wells for Agriculture in Balochistan: Economic and Environmental Viability." *IFPRI PACE Working Paper* (2020)
7. Zaidi, Y., & Rizwan, N. "Gender-based Violence in Punjab." *PCSW Policy Brief* (2019)
8. Lee, J., & Rizwan, N. "What Explains Divergent Investment Performances in Asia-Pacific?" *MPFD Policy Brief*, Vol. 62 (2018)

Conferences & Presentations

- *"Irrigation Adoption in a Changing Landscape: A Combined Economic and Hydrological Approach"* – Universities Council on Water Resources (UCOWR) Conference, 2025.
- *"Weathering the Change: Modeling Crop Choices in Response to Climate Variability"* – AAEA Conference, 2025, Heartland Environmental and Resource Economics Workshop, 2024
- *"Are Systematic Inequalities in the Piped Water Infrastructure Paving Way for the Water Mafia"* – AAEA & AERE Conference, 2025, Fate of the Earth, MSU Water Alliance, 2025, MSU & UM Energy Environmental Econ Day , 2024
- *"Assessing the Economic Cost of Depleting Groundwater in Balochistan: A Social Accounting Matrix (SAM) Multiplier Approach"* – IFPRI Retreat and Research (RISE) Conference, 2022

Skills

Skills: Causal Inference, Spatial Analysis, Panel & Cross-sectional Data Econometrics, Computable General Equilibrium (CGE) Modeling, Economic Forecasting, Time Series Analysis
Math: Constrained Optimization, Probability Statistics, Maximum Likelihood Estimation
Software: Stata, R, GIS, GAMS
Languages: Urdu, English