

Sayantana Roy

(+1) 765 389 4938 \diamond roy175@purdue.edu
403 Mitch Daniels Blvd, West Lafayette, IN 47907, USA
<https://sayantanhroy.github.io/>

EDUCATION

Purdue University Ph.D. Candidate in Economics Advisor: Prof. Mario J. Crucini	2021 - 2027 (expected)
Madras School of Economics M.A. in Economics	2017 - 2019
R.K.M.R College, Narendrapur B.S. in Economics	2014 - 2017

RESEARCH FIELDS

Macroeconomics, Regional and Spatial Economics, International Trade.

JOB MARKET PAPER

The Spatial Allocation of Fiscal Stimulus: County Size and the Gains from Reallocation

Abstract: *The employment return to fiscal stimulus depends on where it is spent. Using county-level variation in American Recovery and Reinvestment Act (ARRA, 2009–2012) outlays, I document an inverted-U between local employment responses and county size—effects peak in mid-sized counties (approximately 100,000 residents) and are far smaller in both small counties (approximately 10,000 residents) and large counties (approximately 1 million residents). A multi-region New Keynesian model with search-and-matching frictions and endogenous labor force participation, calibrated to the zero lower bound, rationalizes the pattern: small counties lose stimulus to demand leakage because they are highly open, while large counties, despite retaining most spending locally, hire weakly under high vacancy-posting costs. The observed spatial allocation therefore leaves gains unrealized: reallocating 35% of ARRA funds from large to mid-sized counties adds roughly 30,000 job-years; a full reallocation adds roughly 85,000 and cuts the cost per job-year by about \$4,700. Targeting mid-sized labor markets would have raised employment at no added cost.*

WORK IN PROGRESS

Common Shocks, Local Exposure: Sectoral Wage Dynamics Across U.S. Counties

This paper studies how recessionary labor-income risk varies across workers, sectors, and places. Using county-sector wage data, I develop a Bayesian dynamic factor model that decomposes real wage income per resident into a county-sector trend, persistent local deviations, and latent aggregate and sectoral factors, letting counties and sectors differ in their exposure to common shocks. Evidence from the Great Recession points to sharply uneven risk: goods-producing wages were hit hardest, service-sector wages saw milder shocks, and public-sector wages stayed nearly flat. I use the model to construct event-specific exposure measures for the Great Recession and COVID, yielding a unified

method for measuring recession exposure and the geography of labor-income risk.

Gender Gaps in Employment Seasonality: The Role of Unemployment Insurance

Labor market risk naturally arises due to seasonal shocks. For example, construction employment peaks in summer and slows in December, while retail surges in December and dips in January. A key question is whether this seasonality also appears in the number of workers receiving Unemployment Insurance (U.I.) benefits each month. While U.I. is designed to protect against unexpected shocks, seasonal fluctuations in insured unemployment may still occur as firms lay off excess workers during off-peak periods. The imperfect experience-rated tax structure of U.I. incentivizes firms to retain surplus workers, with layoffs following these seasonal cycles. I document significant seasonal differences in insured unemployment between men and women. Gendered patterns in employment and caregiving responsibilities likely contribute to the distinct seasonality observed for women.

RESEARCH EXPERIENCE

Research Assistant - Prof. Mario J. Crucini (Purdue) 2023 - present
Research Assistant - Prof. Seungki Hong (Purdue) 2022

TEACHING EXPERIENCE

Purdue University, Department of Economics 2021 - present
Instructor of Record: Introductory Macroeconomics (ECON 252) Summer 2023, 2025

Teaching Assistant: Macroeconomic Theory III (ECON 612, PhD), Money and Banking (ECON 380), Introductory Econometrics (ECON 360), Intermediate Macroeconomics (ECON 352)

INDUSTRY EXPERIENCE

American Express, Credit and Fraud Risk Division, Data Scientist 2019 - 2021

AWARDS AND FELLOWSHIPS

Krannert Doctoral Students' Research Symposium Winner, Purdue University 2024
Novshek-Watts Scholarship, Purdue University 2021
Graduate Excellence Award, Madras School of Economics 2019
Academic Fellowship, Madras School of Economics 2017 - 2019
Academic Excellence Award, R.K.M.R College Narendrapur 2017

CONFERENCE PRESENTATIONS

2026 Midwest Macroeconomics Meetings (Marquette University)
2025 20th Annual Conference on Economic Growth and Development (ISI, Delhi)

COMPUTATIONAL SKILLS

Python, JAX, Julia, MATLAB, Stata, SQL, PySpark, Git

REFERENCES

Mario J. Crucini

Professor

Department of Economics

Purdue University

mcrucini@purdue.edu

Seungki Hong

Assistant Professor

Department of Economics

Purdue University

hong397@purdue.edu

Cathy M. Zhang

Professor

Department of Economics

Purdue University

cmzhang@purdue.edu