Piyush Gandhi

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Research Fields

Primary: Development Economics and Environmental Economics
Secondary: Applied Microeconomics

Education

University of California, Santa Cruz, USA
PhD in Economics — 2026 (expected)
M.A. in Economics, Department of Economics — 2022
Oxford University, UK
MPhil Economics — 2019
University of Delhi, India
B.A. (Honors) Economics — 2017

Employment

The World Bank, Consultant (DEC-Sustainability & Infrastructure) — 2022-2023
Good Business Lab, Senior Research Associate for Prof. Achyuta Adhvaryu (UCSD) and Anant Nyshadham (University of Michigan) — 2019-2021
National Institute of Public Finance and Policy, Summer Intern (New Delhi, India) — 2018

Job Market Paper

"Extinguishing the Blaze: Impact of Crop Residue Management on Stubble Burning in India"

Crop residue burning is a major source of air pollution in India, driven by the short window between rice harvesting and wheat sowing, and limited awareness of sustainable alternatives. This study evaluates the impact of subsidizing early-maturity variety rice seeds (EMV) and providing technical training on residue management, using a randomized controlled trial in Punjab, India. Relative to the control group, providing subsidies alone increases sustainable harvesting by 3.57 acres (123% increase over the control group). When combined with training, the effect rises to 4.60 acres (a 158% improvement relative to the control mean). Training enhances the impact of subsidies by promoting greater EMV adoption and addressing knowledge gaps in sustainable residue management. Treated farmers reported improved awareness and confidence in alternatives to burning, with some learning occurring even in the subsidy-only group. Instrumental variable estimates suggest that adopting EMVs on one additional acre increases sustainable harvesting by 1.35 acres. These findings offer the first causal evidence that India's policy push for EMV adoption can effectively curb residue burning. I also find that the effects are stronger for farmers who were more aware of alternate methods of residue management at the baseline, and weaker for larger farmers. A cost-benefit calculation suggests that each $1 spent generates $32.28 of social benefits in the Seed Subsidy Only group and $28.35 in the Subsidy and Training group, highlighting the environmental and economic efficiency of scaling this policy intervention.

Working Papers

"Does Micro-irrigation Save Energy? An Investigation in Gujarat, India" with Nick Hagerty and Ariel Zucker (under review, *Energy Economics*)

Energy efficiency is a global priority, but investments in energy efficiency do not always deliver the expected benefits. This paper studies micro-irrigation systems (MIS), a technology thought to reduce the energy required for irrigation by as much as 70 percent. We installed individual meters to directly measure the energy consumption of several hundred farmers in Gujarat, India, and linked this meter data with survey data to yield a comprehensive view into energy use patterns in smallholder agriculture.

We document two facts. One, energy use varies widely across farmers, and this variation is unexplained by factors such as farm area or village geography. Two, MIS users in our sample consume 30 to 40 percent more energy than nonusers of MIS. This difference does not appear to be explained by observable differences across farmers nor by rebound effects, suggesting that the energy impacts of MIS under real-world conditions may be disappointing. While these findings are not causal, they highlight a need for increased attention to details of implementation and further research into the actual benefits of resource-conserving technologies.

"Credit access and firm pollution in India" with Patrick Behrer and Teevrat Garg

This paper examines how improved banking access influences environmental outcomes in India, leveraging a policy-driven expansion of bank branches in underbanked districts. Using a difference-in-differences approach, we analyze district-level emissions data to assess the impact of increased credit availability on firm-level pollution. Our findings indicate that expanded credit access leads to a significant decline in industrial PM2.5 and CO_2 emissions, particularly in regions with a high concentration of small firms. We provide evidence that firms utilize enhanced credit access to invest in cleaner production technologies and pollution control measures, thereby improving productivity while reducing emissions. These results suggest that financial inclusion policies can play a crucial role in both economic development and environmental sustainability.

"**Evaluating Tools for Adaptation Strategies and Cost-Benefit Assessment of Coastal Climate Solutions in California"** with Galina Hale, Borja Reguero and Drishan Banerjee

This paper develops a methodology to evaluate the costs and benefits of climate adaptation policies for coastal assets. Focusing on the regions surrounding Santa Cruz, Ventura, and Half Moon Bay, our methodology extends beyond traditional approaches that rely primarily on monetary valuation of reduction in direct damages. Reduction in storm-related flood risk not only reduces direct physical damages, but associated loss of business, access to public spaces, public and private infrastructure, as well as other non-pecuniary services provided by coastal assets. We propose a nomenclature of all assets that may be affected by the flood, their interconnections, and relevant stakeholders. For each asset class we identify the best methodology to assess a monetary value of flood risk reduction. We apply this methodology to all flood-affected assets in the three regions we study. Importantly, flood risk reduction not only reduces total flood-related losses on average, but also reduces dispersion of these losses across different scenarios. We fit Pareto distribution to total flood losses across different flood scenarios and calculate probability of losses exceeding a certain threshold (probability value-at-risk), which we convert to willingness to pay (WTP) for flood reduction. We then compare this willingness to pay with the cost of relevant adaptation approach to arrive at the cost-benefit analysis (CBA). We provide two estimates for each adaptation option — "traditional" CBA that includes only direct damages, and "WTP" CBA that includes total loss reduction as well as uncertainty-reduction benefit. This approach offers a more comprehensive understanding of the impacts and trade-offs involved in adaptation policy design and could be extended to impute benefits of flood risk reduction that accrue to specific stakeholders.

"Call and Response: The Role of Organizational Incentives in Amplifying Worker Voice" with Achyuta Adhvaryu, Anant Nyshadham, Teresa Molina, and Smit Gade

The ability of workers to communicate effectively with management and, critically, to have their questions, suggestions, and concerns heard and acted upon is commonly held as crucial for organizational performance. Yet there exists little rigorous evidence to evaluate this claim. To address this gap, we conducted a randomized controlled trial among 43 factory units of a large Indian garment manufacturer. Units were assigned at random to one of two treatment arms or a control arm. In the first treatment arm, workers were given access to a tool that enabled anonymous, two-way communication with HR via text or voice message. In the second, access to this tool was coupled with incentives for HR managers based on timely and appropriate case resolution. We find that access to the tool paired with organizational incentives substantially reduced absenteeism, increased workers' productivity, and earnings, and (suggestively) reduced turnover. The tool alone did not affect any of these outcomes. Our results underscore the importance of aligning incentives within organizations to effectively improve both worker outcomes and firm perform.

On-going Work

"Mitigating Groundwater Depletion in Punjab: Canals as a Sustainable Alternative" with Rajdev Brar and Aprajit Mahajan

Research Grants

J-PAL SARWA Pilot Grant ($75,000)	2025
CEGA Development Economics Challenge ($18,350)	2024
Dissertation Research Grant, UC Santa Cruz ($4,650)	2024
Blum Scholar Grant, UC Santa Cruz ($4,000)	2023
Dissertation Research Grant, UC Santa Cruz ($4,850)	2023
PEDL Exploratory Research Grant (£22,450)	2023
J-PAL ATAI Travel/ Proposal Development Grant ($5,520)	2022
Dissertation Research Grant, UC Santa Cruz ($4,535)	2022

Fellowships, and Awards

UCSC Center for Coastal Climate Resilience Fellowship ($32,430)	2025
UCSC Agricultural Experiment Station Fellowship ($6,000)	2025
UCSC Grad Slam People's Choice Award	2025
UCSC Graduate Symposium Best Presentation (Social Sciences)	2024 and 2025
UCSC Grad Slam Best Presentation (Social Sciences)	2024
UCSC Agricultural Experiment Station Fellowship ($6,000)	2024
UCSC Teaching Assistant Award for Excellence in Teaching	2023
UCSC Eileen Brooks Memorial Research Paper Award ($2,000)	2023

Presentations (Includes scheduled)

All California Labor Economics Conference, Stanford University	2025
Economics Graduate Students' Conference, WashU in St. Louis	2025
Structured Finance to Fund Climate Solutions, Washington DC	2025
Summer School on Socioeconomic Opportunity & Inequality, Brazil	2025
LAERE Conference, Universidad de los Andes, Colombia	2025
Research Transparency and Reproducibility Training, UC Berkeley	2025
Agricultural Experiment Station Symposium, UC Santa Cruz	2025
Blum Scholar Research Presentations, UC Santa Cruz	2024
Summer School in Environmental & Energy Economics, UC Berkeley	2023
Europaeum Conference, Pantheon- Sorbonne University, France	2019
Europaeum Conference, University of Helsinki, Finland	2018
World Youth Forum, Egypt	2018

Coding Skills

Stata, R, SurveyCTO, Remote Sensing (Google Earth Engine), LaTeX

Languages

Hindi (Native), English (Advanced), Punjabi (Advanced)