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Research interests

Environmental Economics, Development Economics, Spatial Economics

Education

PhD	Economics	London School of Economics	2026
MRes	Economics *(Distinction)*	London School of Economics	2022
MPA	Public and Economic Policy *(Distinction)*	London School of Economics	2019
BSc & MSc	Industrial and Energy Engineering *(7.7)*	Universidad Politécnica de Madrid	2014
MEng	Mechanical and Aerospace Engineering	Illinois Institute of Technology	2014

References

Oriana Bandiera
Professor, LSE
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Robin Burgess
Professor, LSE
Department of Economics
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Gharad Bryan
Associate Professor, LSE
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Swati Dhingra
Associate Professor, LSE
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Working Papers

1. **Trading Trash on Tricycles** *(Job Market Paper)*
(with Yoshiki Wiskamp)

   Low enforcement and fiscal capacity limit the set of policy instruments available for municipal governments to control the externalities arising from density. Citizens resort to unregulated markets for service provision, but these leave externalities unaddressed. We build a structural model of solid waste collection and disposal, and estimate it using experimental variation and bespoke data we collect in Accra, through surveys with households and informal waste collectors, and a self-developed smartphone application. Halving fees at waste transfer stations can correct environmental externalities unpriced by the market up to the social planner's choice. Welfare gains exceed policy implementation costs, but these are substantial –55% of the current budget for solid waste management. Pricing policies are more effective and cheaper than planned new infrastructure development alone. In settings with low fiscal and regulatory capacity, limited second-best formal pricing regulation can help internalise environmental costs, effectively delivering public services by leveraging informal markets.

2. **Ray of Hope? China and the Rise of Solar Energy**
(with Robin Burgess, David Laszlo, Pol Simpson, John Van Reenen, and Yifan Wang)

Do industrial policies that promote clean energy offer a "ray of hope", increasing a country's economic growth and welfare, whilst simultaneously reducing carbon emissions? We study the impact of Chinese solar subsidies whose implementation by cities coincided with a dramatic fall in global solar prices. We construct new panel data on city-level solar policies, patenting and output. Using synthetic-difference-in-differences between 2004-2020, we find that production and innovation subsidies were more effective than demand-side (installation) subsidies in generating large and persistent increases in local innovation, firm numbers, output and exports. However, demand policies most strongly reduce local pollution. We build and estimate a quantitative spatial model with endogenous innovation and heterogeneous productivity across firms and cities, which accounts for business stealing and knowledge spillovers. Structural quantification of this model shows that: (i) the local effects remain substantial at the aggregate level; (ii) policy explains almost two-fifths of the price decline of solar panels and a third of the increase in Chinese innovation; (iii) solar industrial policies increased Chinese welfare by 1% to 2.3%, almost as much as existing estimates of WTO Accession; and (iv) although all subsidy types increase aggregate welfare, innovation subsidies are by far the most cost-effective

Work in Progress

3. **Channelling Density: Sewerage Investments in 19th Century Paris**
(with Yoshiki Wiskamp)

   The internal structure of cities is shaped by localised production and residential externalities. Lack of sanitation gives rise to negative externalities in the form of pollution and disease transmission. Sanitation investments might therefore be essential to allow for people to tolerate density and for positive agglomeration externalities to emerge; thereby turning population density from a downside into an upside. To investigate this hypothesis, we assemble an address-level data set spanning the entire construction period of the Parisian sewage network during the 19th century. We first present event studies examining changes in firm density, residential density, land values, and disease incidences. We then leverage an urban model to estimate the impact of sewers on the strength of agglomeration and city structure. Through counterfactual analyses we examine the impact, cost-benefit, and alternative placements of sewers. Finally, we asses the extent to which sewers displaced pollution to the Parisian suburbs, affecting their long-term development.

4. **The Miracle on the Han: Urbanisation, Industrial Policy, and Rural Development**
(with Oriana Bandiera, Robin Burgess, Tim Dobermann, Jay Euijung Lee, Jeongkyun Won, and Hyunjoo Yang)

5. **Electricity Supply and Firm Agglomeration in Ghana**
(with Tim Dobermann, and Niclas Moneke)

   Electricity is a crucial input for modern production, yet its quality across time and space varies substantially. In this project, we ask how the endogenous allocation of electricity affects firm productivity and agglomeration. We build a unique spatial dataset combining administrative data on electricity consumption, engineering records on electricity outages, and a detailed firm panel from a national census. With this data in hand, we use a machine learning algorithm to predict the spatial allocation of outages following exogenous supply shocks. Using this as an instrument, we obtain reduced-form causal estimates of how firms respond to outages. Lastly, leveraging a dynamic spatial general equilibrium model, we compare the current equilibrium observed in the data to counterfactuals where outages are (i) reduced and, (ii) optimally adjusted to maximise welfare, taking into account the spatial misallocation in firm entry and growth across the country.

6. **Water, Sanitation, and Climate Resilience in the Tropics**
(with Juliana Helo)

   Using geolocated information on over 400,000 water points and a variety of health surveys across Sub-Saharan Africa, we document that access to functioning water and improved sanitation increases villages' resilience to high temperatures, reducing mortality and disease incidence. Leveraging machine learning techniques and rich information on the characteristics of water points, we identify that whether maintenance is private, communal,

or institutional is a key determinant for a water point functional status. We design an intervention to improve the maintenance of water points when its responsibility is assigned at the community-level.

Grants (current total amount: £343,043)

1. **ESRC Research Grant: UK and South Korea social science, arts and humanities connections**, (£48,686) "Deciphering the Miracle on the Han: Lessons for the World on How South Korea Escaped Poverty and Transformed its Economy" (with Oriana Bandiera, Robin Burgess, Tim Dobermann, Jay Euijung Lee, and Hyunjoo Yang)
2. **STEG Small Research Grant**, (£20,875) "Deciphering the Miracle on the Han: Lessons for the World on How South Korea Escaped Poverty and Transformed its Economy" (with Oriana Bandiera, Robin Burgess, Tim Dobermann, Jay Euijung Lee, and Hyunjoo Yang)
3. **International Growth Centre, Small Project Fund** (£20,000) "Electrification & Structural Transformation in Ghana" (with Tim Dobermann & Niclas Moneke)
4. **International Growth Centre, Small Project Fund** (£4,035) "Measuring and Understanding Electricity System Losses in Ghana" (with Tim Dobermann & Niclas Moneke)
5. **International Growth Center, Small Project Fund** (£20.000) "Chronic Flooding, Waste Management, and Big Push Infrastructure in Accra's Informal Settlements" (with Yoshiki Wiskamp)
6. **International Growth Center, Research Grant** (£30,000) "Trading Trash on Tricycles: Waste Markets for Sustainable Urban Development" (with Yoshiki Wiskamp)
7. **STICERD LSE, PhD Research Grant** (£5.000) "Trading Trash on Tricycles: Waste Markets for Sustainable Urban Development" (with Yoshiki Wiskamp)
8. **International Growth Center, Research Grant** (£26,620) "Deciphering the Miracle on the Han: How South Korea Escaped Poverty and Transformed its Economy" (with Oriana Bandiera, Robin Burgess, Tim Dobermann, Jay Euijung Lee, and Hyunjoo Yang)
9. **International Growth Center, Research Grant** (£44,600) "Electricity Supply and Firm Agglomeration in Ghana" (with Tim Dobermann & Niclas Moneke)
10. **International Growth Center, Research Grant** (£100,000) "Trading Trash on Tricycles: Waste Markets for Sustainable Urban Development" (with Yoshiki Wiskamp)
11. **International Growth Center, Research Grant** (£18,862) "Water, Sanitation, and Climate Adaptation in the Tropics" (with Juliana Helo)
12. **European Space Agency** (€5,000) "ESA Network of Resources (NoR) Sponsorship - Using Remote Sensing to Detect Urban Flooding in Accra" (with Yoshiki Wiskamp)

Employment

London School of Economics & Political Science	*London, UK*
PhD Candidate in Economics	2020-
Graduate Teaching Assistant	2020-
Teaching Fellow and Course Convenor	2023-
Universidad De los Andes	*Bogotá, Colombia*
Visiting PhD Student in the Economics Department	2024

IGIER – Università Bocconi *Milan, Italy*
Pre-Doctoral Research Assistant to Professor Eliana La Ferrara 2019-2020
European Bank for Reconstruction and Development (EBRD) *London, UK*
Sector Economics & Policy Research Intern 2019
European Central Bank *Frankfurt am Main, Germany*
International Microprudential Supervisory Policies Trainee 2018
Accenture Financial Services *Madrid, Spain*
Management Consulting Senior Analyst 2015-2017
Acciona Infrastructure *Ourense, Spain*
Civil & Production Engineer (Trainee) 2014-2015

Honors, Awards & Fellowships

LSE Excellence in Education School Award, 2024 and 2025
LSE Student Union Teaching Award Nomination (Student-led), 2021 & 2024
LSE Class Teacher Awards, Economics Department - Highly Commended, 2021
LSE Economics Departmental PhD Scholarship, 2020
UPM Scholarship for Top 25 Students Across Exchange Programs in the United States and Canada, 2015
Government of Madrid Award & Scholarship for Academic Excellence, 2010
Government of Spain Tuition Scholarship for Academic Excellence ("Matrícula de Honor"), 2010
100 Best Results in the Spanish University Entrance Test (9,64/10), Universidad Autónoma de Madrid, 2009

Presentations (* scheduled)

2025	Conference on Urban and Regional Economics (CURE)*	CEPR & CEP, *London, UK*
	ASSA Annual Meeting*	*Philadelphia, USA*
	LSE IO-DEV Workshop	London School of Economics
	Environment Camp	London School of Economics
2023	SITE: Politically Feasible Energy and Environmental Policy	Stanford University
	NBER Summer Institute: Environmental and Energy Economics	*Boston, USA*
2022	Jiam International Conference: Development Economics Week	Sogang University, *Seoul, South Korea*

Teaching Experience

Couse Convenor & Teaching Fellow (postgraduate) 2023-
LSE: Course Convenor: Mathematics and Statistics for Masters of Public Policy 2023-
LSE: Teaching Fellow: Development Economics for Master of Public Administration 2023-
Graduate Teaching Assistant 2021-
LSE: Microeconomics 2021-2022
LSE: Econometrics I 2022-2023
LSE: Development Economics 2021-2023

LSE: Development Economics Summer School	2022
LSE: Environmental Economics	2023-
IZA/FCDO G²LM|LIC: Online Development Economics Course	2024-

Languages

Spanish (native), English (fluent), French (intermediate), Stata, R, QGIS, LaTeX, MATLAB, Python

October 10, 2025