

Deyu Rao

November 29, 2021

dr526@cornell.edu • +1.607.262.9576 (US) • +86.18810661839 (China)
410 Warren Hall • Cornell University • Ithaca NY 14850

Education

Ph.D., Applied Economics and Management, Cornell University	ITHACA, NY, 2022 (<i>expected</i>)
<i>Committee:</i> Shanjun Li (<i>chair</i>), Panle Jia Barwick, Ivan Rudik	
M.Sc., Applied Economics and Management, Cornell University	ITHACA, NY, 2017
B.Econ. with Distinction, Energy Economics, Renmin University of China	BEIJING, CHINA, 2015
B.A., English Language and Literature, Renmin University of China	BEIJING, CHINA, 2015

Research and Teaching Interests

Environmental Economics, Urban Economics

Research

Job Market Paper

“The Role of Environmental Amenities in the Urban Economy: Evidence From a Spatial General Equilibrium Approach”

Environmental amenities play an important role in residential location decisions, which in turn affect the concentration of consumption and production activities. In this paper, I develop and estimate a spatial general equilibrium model to examine how environmental amenities affect the spatial distribution of urban economic activities and their welfare consequences. The model characterizes household location and consumption decisions, production decisions, as well as urban agglomeration and dispersion forces. The empirical analysis leverages a natural experiment of pollution monitoring and information disclosure program and recovers key underlying parameters using fine-scale travel data on commuting and consumption trips and environmental amenities. The analysis shows that job access, residential amenities, and consumption access account for 49%, 30% and 21% of overall attractiveness of a residential location, respectively. A one-standard-deviation change in air quality leads to a 0.24-standard-deviation change in individuals’ perceived amenity level. Counterfactual simulations suggest a 8.4% welfare gain if individuals were to fully incorporate environmental amenities into their decisions, compared to the scenario of not incorporating their impacts. The welfare difference is driven by changes in residential and workplace locations as well as consumption and production decisions.

Working Papers

“The Morbidity Cost of Air Pollution: Evidence from Consumer Spending in China,” with Panle Jia Barwick, Shanjun Li, and Nahim Bin Zahur, NBER Working Paper 24688, 2018.

R&R at The Review of Economics and Statistics.

Using the universe of credit- and debit-card transactions in China during 2013-2015, this paper provides the first nationwide analysis of the healthcare cost of air pollution, as measured by fine particulate matter (PM_{2.5}). We leverage spatial spillovers of PM_{2.5} from long-range transport for exogenous variation in local pollution and employ a flexible distributed lag model to capture semi-parametrically the dynamic response of pollution exposure. Our analysis shows a 10 $\mu\text{g}/\text{m}^3$ decrease in PM_{2.5} would reduce annual healthcare spending by more than \$9.2 billion, about 1.5% of China’s annual healthcare expenditure.

“Improved Transportation Networks Facilitate Adaptation to Pollution and Temperature Extremes,” with Panle Jia Barwick, Dave Donaldson, Shanjun Li, and Yatang Lin. *under review*.

Based on high-resolution transaction records from the world’s largest payment network, this research shows how China’s rapid expansion of high-speed railways and air-travel networks (HSR/air) has facilitated the use of intercity travel as an effective means of adaptation to extreme pollution and temperature episodes. On average, HSR/air connection would reduce travelers’ exposure to both extreme pollution and temperature by 16% when home cities are experiencing pollution and temperature extremes.

Work-in-Progress:

“Quantifying the Impact of COVID-19 on Economic Activities Through Air Pollution,” with Zhengyuan Wu, and Shanjun Li.

“Traffic Congestion and Consumer Spending,” with Nahim Bin Zahur.

Teaching Experience

Teaching Assistant

Econometrics , AEM 7100 (doctorate level), Prof. Shanjun Li	<i>Spring 2020, 2021</i>
Investments , AEM 4670 (undergraduate), Prof. Sumudu Watugala	<i>Fall 2019, 2020</i>
CICER Summer Camp	
Market Simulation	<i>Summer 2019, 2020</i>
Marketing, Prof. Jura Liaukonyte	<i>Summer 2020</i>
Behavioral Economics, Prof. Sarah Jacobson,	<i>Summer 2020</i>
Outstanding Graduate Teaching Assistant, Dyson School of Applied Economics and Management	<i>2020-2021</i>

Research Experience

Research Assistant

Prof. Shanjun Li	ITHACA, 2016, 2018, 2021
Cornell Institute for China Economic Research (CICER)	ITHACA, SHANGHAI & BEIJING, 2016
Cornell Institute for Social and Economic Research (CISER)	ITHACA, 2016
Prof. Ping Qin	BEIJING, 2014, 2015

Fellowships, Grants, and Honors

Summer Graduate Research Assistantship, Cornell University	<i>2018-2021</i>
Graduate Fellowship, Cornell University	<i>2017-2018</i>
Scholarship for Master's Study, China Scholarship Council	<i>2015-2017</i>
Scholarship for Academic Excellence (Undergraduate), Renmin University of China	<i>2012-2014</i>

Referee Services

Journal of Environmental Economics and Management, Journal of Economic Behavior and Organization, China Economic Review, Bulletin of Economic Research

Selected Press Coverage

“How Smog Affects Spending in China,” [The Economist](#), June 2018.
“The Impact of Air Pollution on Healthcare Spending in China,” etc., with Panle Jia Barwick, Shanjun Li, and Nahim Bin Zahur, in [VoxDev](#) (Apr 2019), [VoxEU](#) (Sept 2018), [VoxChina](#) (Aug 2017).

Other Experience

Seminar Committee, Graduate Student Assembly (GSA) of AEM, Cornell University	ITHACA, 2018, 2019
Level II Referee, Chinese Football Association	BEIJING, 2012-2015

Software Skills

Programming: STATA, MATLAB, ArcGIS, Python, R, SAS, SPSS, ORACLE, MS SQL
Language: Mandarin Chinese (native), English (fluent)

References

Shanjun Li

Kenneth L. Robinson Professor
Dyson School of Applied Economics and Management
Cornell SC Johnson College of Business
405 Warren Hall, Cornell University
Email: sl2448@cornell.edu
Phone: 607-255-1832

Panle Jia Barwick

Professor, Department of Economics
448 Uris Hall, Cornell University
Email: panle.barwick@cornell.edu
Phone: 607-255-4867
Fax: 607-255-2818

Nahim Bin Zahur

Assistant Professor of Economics
Economics Department
Queen's University
Email: nz17@queensu.ca

Ivan Rudik

Ruth and William Morgan Assistant Professor
Dyson School of Applied Economics and Management
Cornell SC Johnson College of Business
462 Warren Hall, Cornell University
Email: irudik@cornell.edu