

Research Statement

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My research focuses on the spatial distribution of economic activities across neighborhoods, cities, and countries. There are large and persistent differences across places in terms of income, innovation, and the goods and services available. I aim to better understand the causes and consequences of these differences by both introducing new theoretical models and developing new empirical measures. My research has focused on three broad areas of inquiry: market-size effects on trade, skill-biased agglomeration, and urban location choices.

Market size and the pattern of trade

Economic fortunes in one place depend in part on economic links to other places. My research examining international and intranational trade in goods and services has shown that market-size effects shape the pattern of trade and studied how market access shapes the distribution of the gains from trade.

In “The Determinants of Quality Specialization” [1], I investigate why high-income places specialize in high-quality products and find the scale of demand governs the pattern of specialization and trade. I use plant-level data and within-country variation across cities to disentangle the contributions of higher-income consumers who demand higher qualities and higher-skilled workers who may be more adept at producing higher qualities. Market size plays the predominant role in quality specialization across US cities: cities with access to more high-income consumers specialize in higher-quality goods. This role for scale suggests developing economies with high-income neighbors have better prospects for quality upgrading. This article shared the 2014 World Trade Organization Essay Award for Young Economists. In ongoing work [2], we show that climate change will subject neighboring countries to greater spatial correlation of agricultural productivity, making the gains from trade more unequal.

In “Market Size and Trade in Medical Services” [3], we quantify the roles of local increasing returns and trade costs in medical services. Though often described as non-tradable, medical services are frequently traded within the United States: one-fifth of Medicare claims are patients “importing” a service from a doctor in a different region. Scale economies cause market size to govern the pattern of specialization: larger regions specialize in producing and exporting less common medical procedures because their larger patient volumes lower their quality-adjusted costs. We estimate the scale elasticity of production, the distance elasticity of demand, and region-specific quality levels in order to quantify how patients’ access would change in a variety of counterfactual policy scenarios. Given the key roles of interregional trade and scale economies, policies aimed at improving access in rural regions need not necessarily invest in increasing production in those places.

Skill-biased agglomeration

A growing body of evidence suggests that modern agglomeration economies are skill-biased. By many measures, larger cities populated by more educated workers have done better in recent

decades. Growing regional inequality concerns scholars seeking to understand the shift to an economy dominated by skill-intensive services and policymakers seeking to aid people in struggling locations. Paradoxically, the skill-intensive economic activities concentrated in large cities are the white-collar occupations that might be performed remotely or offshored.

I have introduced theoretical models of skill-biased agglomeration. In “A Spatial Knowledge Economy” [4], we introduce a model in which the costly exchange of ideas among heterogeneous agents is the agglomeration force. Our theory explains the positive correlation between cities’ population sizes and college wage premia, unlike the standard spatial-equilibrium model with only two skill types. In “The Comparative Advantage of Cities” [5], we provide a parsimonious theory in which larger cities are skill-abundant and specialize in more skill-intensive industries and occupations, which describes US patterns well. In “Cities, Lights, and Skills in Developing Economies” [6], we show this theory also describe patterns in emerging markets well after defining metropolitan areas using nighttime satellite images. These articles emphasize that models need more than two skill types to generate empirically plausible accounts of skill-biased agglomeration. Thus, we provide a theoretical platform for investigations of this important shift in urban patterns, and our results caution against measures of inequality and policy responses that fail to account for spatial sorting within broad skill groups.

Motivated by the COVID-19 pandemic, in “How Many Jobs Can be Done at Home?” [7], we introduce occupation-level measures of remote-work feasibility for cities and countries. We use surveys describing the typical experience of US workers in nearly 1,000 occupations to classify each occupation as able or unable to be performed remotely. The skill-intensive jobs concentrated in high-income cities are in fact the occupations best suited for remote work. Across countries, lower-income economies have a lower share of jobs that can be done at home. Our remote-work measures have been subsequently corroborated by real-time surveys, widely used to calibrate quantitative models of the COVID-19 pandemic, and frequently cited in public discussions of the future of cities. Whether widespread adoption of remote work could substantially alter the geographic landscape of economic activity, which we discuss in [8], depends in part on the strength of the skill-biased agglomeration economies that my research has explored.

My work in this area earned the 2022 August-Lösch Prize and the 2022 Bhagwati Award.

Urban location choices

New data sources let us explore novel dimensions of individual choices in spatial contexts. My research on urban location choices has focused on documenting segregation in novel domains and leveraging high-frequency, high-dimensional data.

Social scientists focused on segregation have overwhelmingly studied where people live. In “How Segregated is Urban Consumption?” [9], we use business reviews posted on Yelp to estimate the racial segregation of consumers in New York City restaurants. While whites-only restaurants have been illegal since 1964, our study is the first quantitative estimate of segregation in this domain. Consumption choices are about half as segregated as residences, and consumption segregation owes less to transit costs than to consumers being less likely to patronize restaurants in neighborhoods demographically different from their own. American life is geographically segregated along racial and ethnic lines in everyday activities such as dining, not just residences and schools.

In ongoing follow-up research [10], we use smartphone movement data to estimate consumer preferences across America and document cross-city variation in consumption segregation along racial and income lines. Motivated by the pandemic, in “Measuring movement and social contact with smartphone data: a real-time application to COVID-19” [11], we compare smartphone data to conventional surveys, publish daily indices for use by other researchers, and document how

pandemic-induced reductions in activity vary across people and places.

In “Spatial Economics for Granular Settings” [12], we show that new data require new modeling approaches. Conventional calibration techniques suffer overfitting problems when quantitative spatial models are applied to high-dimensional settings in which the number of location pairs is large relative to the number of economic agents. We demonstrate these problems in Monte Carlo simulations and event studies of neighborhood employment booms. Parsimonious specifications of spatial linkages deliver better counterfactual predictions. To quantify how counterfactual outcomes depend on the idiosyncratic component of individuals’ decisions, we introduce a quantitative spatial model with a finite number of individuals.

References

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