Application for 'NBER Entrepreneurship Research Boot Camp 2020'

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Essay for 'NBER Entrepreneurship Research Boot Camp 2020'

Research Statement

My research primarily focuses on understanding the factors which affect its spread of key innovations across geography and heterogenous effects of innovation across skills and locations. I use text of patents to study two key questions: 1) What is the role of immigration in learning key technologies from foreign countries, and what is the local labor market impact of learning these technologies? 2) How has the ease with which innovators in different geographies learn from each other changed within the US, and does this have an effect on geographic inequality across locations?

In order to identify and study geographic element of innovation, I develop an algorithm which takes the text from patents to identify keywords which represent the idea in a patent. The algorithm breaks down a patent among a set of 'technical' keywords, and a set of weights for each of these keywords in the patent. I use this algorithm to answer two separate research questions.

First, I study the cross sectional patterns of diffusion across geographies and industries. I use the similarity of keywords across patents to identify diffusion and document that diffusion patterns mimick past waves of migration, foreign direct investment, and trade across countries. Furthermore, I also show that regions which have the largest exposure to industries which derive most insights from foreign patenting, experience an increase in wages and skill intensity.

Second, I study the changing structure of diffusion across locations in the US. To that end, I take a structural interpretation of each of the keywords as varieties. Specifically, I write down an endogeonous variety multi-economy growth model where innovators in economies derive quality insights from innovators in other economies. Under the structure of this model, I derive time varying diffusion pameters. I document that this estimated diffusion network across locations is very sparse and persistent, and can potentially explain cross county inequality in wages and research productivity.

Another strand of my research focuses on understanding the labor supply aspect of geographic skill clusters. More specifically, highly skilled people mostly work in cities, and furthermore people with niche skills tend to work in clusters, a subset of cities. I (along with my PhD classmate coauthor) use the Indonesian census data to study the barriers to entry for people from different locations to work in these niche high skill occupations. Our preliminary findings suggest that controling for income there is large geographic heterogeneity across employment at different skill levels. Our next steps are to understand the reasons behind this geographic heterogeneity.

Why the bootcamp?

In most economic models of growth with endogenous innovation, innovation is performed by entrants/entrepreneurs. Policies encouraging entrepreneurship also encourage innovation. Thus, I think it is not really possible to fully understand one without the other. A bootcamp into entrepreneurship will provide me with new applications and probably some cool new instrument ideas of the methods and datasets collated as a part of my research on innovation and geography.

Furthermore, I will get an opportunity to interact and collect feedback from leaders in the field and peers working on similar questions.

CV

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Education

PhD Economics, 3rd year 2017-Current

Boston University

Masters of Arts, Economics 2015

Delhi School of Economics, University of Delhi

First Division

Bachelor in Engineering, Electronics and Communication 2012

Netaji Subhas Institute of Technology, University of Delhi.

First Division

Work in Progress

Ideas and Geography 2019

Abstract

I adapt a simple text classification method to measure key ideas in a patent. I study the cross sectional patterns of diffusion across geographies and industries. I use the similarity of keywords across patents to identify diffusion and document that diffusion patterns mimick past waves of migration, foreign direct investment, and trade across countries. Furthermore, I also show that regions which have the largest exposure to industries which derive most insights from foreign patenting, experience an increase in wages and skill intensity.

Estimating Dynamic Diffusion Network 2019

Abstract

I study the changing structure of technology diffusion across locations in the US. To that end, I take a structural interpretation of each of the keywords as varieties. Specifically, I write down an endogeonous variety multi-economy growth model where innovators in economies derive quality insights from innovators in other economies. Under the structure of this model, I derive time varying diffusion pameters. I document that this estimated diffusion network across locations is very sparse and persistent, and can potentially explain cross county inequality in wages and research productivity.

Work Experience	**Research Assistant for Prof. Tarek Hassan**	Jan 2018-Current
	Boston University	
	Teaching Assistant for Introductory Statistics	June 2017-Dec 2018
	EC-203, Boston University	
Research Experience	**Research Associate,**	July 2015-July 2016
	Centre for Advanced Financial Research and Learning,	
	Reserve Bank of India	
Computer Skills	Python, Stata, R Programming Language, LaTeX	
Graduate Courses	**Semester 1: GPI 3.78**	2017
	Microeconomic Theory, Macroeconomic Theory, Intro to Math Econ, Adv. Statistics	
	Semester 2: GPI 3.78	2018
	Microeconomic Theory, Macroeconomic Theory, Adv. Econometrics 1	
	Semester 3: GPI 3.68	2018
	Adv. Econometrics 2, Topics in Macroeconomics, Asset Pricing, Intl. Trade	
	Semester 4: GPI 4.00	2019
	Applied Macro Econ, Intl. Finance, Topics in Development, Topics in IO	