

# Lin Tian

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## Placement Committee

Placement Chairs: Martin Uribe, [mu2166@columbia.edu](mailto:mu2166@columbia.edu); (Fall) Pierre-Andre Chiappori, [pc2167@columbia.edu](mailto:pc2167@columbia.edu); (Spring) Navin Kartik, [nk2339@columbia.edu](mailto:nk2339@columbia.edu)  
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## Education

Columbia University, New York, NY

Ph.D. in Economics	2018 (Expected)
M.Phil. in Economics	2015
M.A. in Economics	2014

Carnegie Mellon University, Pittsburgh, PA

M.Sc. in Statistics	2006
B.Sc. in Economics, <i>summa cum laude</i> equivalent (Additional major in Statistics)	2006

## Fields of Specialization

Primary: International Trade, Economic Geography  
Secondary: Urban Economics, Public Economics

## Job Market Paper

“Division of Labor and Extent of Market: Theory and Evidence from Brazil”

*Firms are more productive in larger cities. This paper investigates a potential explanation that was first proposed by Adam Smith: Larger cities facilitate greater division of labor within firms. Using a dataset of Brazilian firms, I first document that division of labor is indeed robustly correlated with city size, controlling for firm size. I propose a theoretical model in which this relationship is generated by both a selection effect—firms endogenously sort across space—and a treatment effect—larger cities increase division of labor for all firms, by reducing the costs associated with greater division of labor. The model embeds a theory of firms' choice of the optimal division of labor in a spatial equilibrium model. Structural estimates derived from the model show that division of labor accounts for 16% of productivity advantage of larger cities in Brazil, half of which is due to firm sorting and the other half to the treatment effect of city size. The theory also generates a set of auxiliary predictions of firms' responses to a reduction in the cost of division of labor. Exploiting a quasi-experiment that changes the cost of division of labor within cities—the gradual roll-out of broadband internet infrastructure—I find causal empirical support for these predictions, which helps to validate the model. Finally, the quasi-experiment also provides validation for the structural estimation. The estimated model predicts changes in the average division of labor within different cities in response to the new broadband internet infrastructure, which I find are similar to the actual changes.*

## Working Papers

“Tradability and the Labor-Market Impact of Immigration: Theory and Evidence from the U.S.”, with Ariel Burstein, Gordon Hanson, and Jonathan Vogel

*In this paper, we show that labor-market adjustment to immigration differs across tradable and nontradable occupations. Theoretically, we derive a simple condition under which the arrival of foreign-born labor crowds native-born workers out of (or into) immigrant-intensive jobs, thus lowering (or raising) relative wages in these occupations, and explain why this process differs within tradable versus within nontradable activities. Using data for U.S. commuting zones over the period 1980 to 2012, we find that consistent with our theory a local influx of immigrants crowds out employment of native-born workers in more relative to less immigrant-intensive nontradable jobs, but has no such effect within tradable occupations. Further analysis of occupation labor payments is consistent with adjustment to immigration within tradables occurring more through changes in output (versus changes in prices) when compared to adjustment within non-tradables, thus confirming our model's theoretical mechanism. Our empirical results are robust to alternative specifications, including using industry rather than occupation variation. We then build on these insights to construct a quantitative framework to evaluate the consequences of counterfactual changes in U.S. immigration.*

*"Domestic Offshoring in a Knowledge Economy", with Yang Jiao*

*During past decades, substantial skill and occupation relocation took place across U.S. cities: Big cities attract more skilled workers and become more specialized in cognitive-intensive occupations. Motivated by empirical literature on the association between information and communications technology (ICT) adoption and production fragmentation, we develop a spatial equilibrium model with domestic production fragmentation to analyze the impact of a reduction in the costs of cross-city production teams—e.g., communications cost—on spatial distribution of skills and economic activities. The model generates predictions consistent with the observed empirical patterns, including more spatial segregation of skilled and unskilled workers, and occupation specialization across U.S. cities over time. In contrast to findings in the international offshoring literature, in which there are winners and losers, we find Pareto welfare gains for all agents with heterogeneous talents, together with a substantial measured labor productivity increase at the aggregate level.*

*"Big Bills on Uganda's Sidewalks? Value-added and Trade Taxes under Limited State and Taxpayer Capacity", with Miguel Almunia, Jonas Hjort and Justine Knebelmann*

*Low-income countries (LIC) raise most of their tax revenue using two tax instruments: the value-added tax (VAT) and trade taxes (tariffs). Of these, only tariffs are predicted to distort production, but a given taxpayer's reported liability can be compared against a third party's report—which is thought to facilitate enforcement—under both the VAT and tariffs. For this reason, economists generally encourage VATs but discourage tariffs. However, "third party reporting" facilitates enforcement only if the revenue authority has sufficient capacity to compare reports; firms expect the revenue authority to have such capacity; and firms have sufficient capacity to report correctly. We evaluate the actual performance of a VAT and tariffs in a LIC context, using five years of comprehensive transaction-level tax data provided by the Uganda Revenue Authority (URA). As in many LICs, VAT-registered firms in Uganda are required to report all their transactions with other firms—both domestic and foreign—in their monthly VAT returns, and to report foreign transactions at customs. We crosscheck the amounts reported by sellers and buyers, and find widespread discrepancies. Domestically, sellers on average report much lower values and many fewer transactions than buyers (for whom transactions generate a tax credit rather than a liability). Although buyers reporting less than sellers is also common—partly because taxpayers make mistakes, and partly because they strategically underreport both sales and purchases to "look small"—VAT misreporting leads to an annual loss of revenue of about USD 128million (4% of Uganda's annual tax revenue). In comparison, misreporting of imports appears limited, costing the URA at most about USD 23million per year in tariff revenue. We conclude that low state and taxpayer capacity may dramatically change the calculus when different forms of taxes are compared.*

## **Selected Work-In-Progress**

“Hits from the Bong: The Impact of Recreational Marijuana Dispensaries on Property Values”, with Danna Thomas

*This paper studies the impact of local disamenities on property values, by focusing on the legalization of recreational marijuana dispensaries in Washington State. Policymakers have long expressed concerns that the positive effects of the legalization—e.g., increases in tax revenue—are well spread spatially, but the negative effects are highly localized. We use changes in property values to measure individuals' willingness to pay to avoid the local negative externalities caused by the arrival of marijuana dispensaries. Our key identification strategy is to compare changes in housing sales around winners and losers in a lottery for recreational marijuana retail licenses; due to location restrictions, license applicants were required to provide an address of where they would like to locate. Hence, we have the locations of both actual entrants and potential entrants, which provide a natural difference-in-differences set-up. Based on our preliminary analysis using data from King County, Washington, we find a 1.7% decrease in the value of properties within a 0.5-mile radius of an entrant (or a \$6,700 decline in property values).*

“Information, Fiscal Capacity and Tax Compliance: An Experimental Evaluation”, (Ongoing RCT) with Miguel Almunia, Jonas Hjort and Justine Knebelmann

## **Report**

“An Analysis of Discrepancies in Tax Declarations Submitted Under Value-Added Tax in Uganda”, with Miguel Almunia, Francois Gerard, Jonas Hjort, Justine Knebelmann, Dorothy Nakyambadde, and Claude Raisaro. International Growth Centre, Final Report S-43312-UGA-1, January 2017.

## **Research Assistantships**

Jonathan Vogel, Aug 2015 – Feb 2016; Francois Gerard, Sep 2013 – Aug 2015; Donald Davis, May 2013 – Aug 2013

## **Work Experience**

Urban Redevelopment Authority, Singapore Jul 2006 – Jun 2012  
Executive Planner Level II (terminal appointment)  
*Coordinated national economic, population and land use planning exercises. Developed models to predict and evaluate impacts of policy changes on economy, land use and real estate markets.*

## **Teaching Experience**

Teaching assistant, *Columbia University*  
Economics of New York City, *Fall 2013, Fall 2014, Spring 2016, Spring 2017*  
International Trade, *Fall 2015, Fall 2016*  
Public Economics, *Spring 2015*  
Intermediate Microeconomics, *Spring 2014*

Teaching assistant, *Carnegie Mellon University*  
Experimental Design for Behavioral and Social Sciences, *Spring 2006*  
Introduction to Probability and Statistics, *Fall 2005*  
Principles of Economics, *Spring 2004, Fall 2004*  
Introduction to Civil and Environmental Engineering, *Fall 2003*  
Introductory & Intermediate Programming, *Spring 2003*

## Grants, Honors, and Awards

Dissertation Fellowship, <i>Columbia University</i>	2017–Present
Research Grant, <i>International Growth Center – IGC</i>	2016 & 2017
International Trade Colloquium Grant, <i>Columbia University</i>	2017
Applied Microeconomic Colloquium Grant, <i>Columbia University</i>	2014
Dean’s Fellowship, <i>Columbia University</i>	2012–2016
Phi Beta Kappa	2006
Outstanding Academic Achievement Award, <i>Carnegie Mellon University</i> (Awarded to one graduating student per year)	2006
Overseas Merit Scholarship, <i>Urban Redevelopment Authority, Singapore</i>	2002–2006

## Skills

Programming: STATA, R, Python, Matlab, GIS, Ztree  
Languages: English (fluent), Chinese (fluent), Japanese (beginner)

## Personal

Citizenship: Singaporean  
Marathon runner: New York City Marathon (2016), Chicago Marathon (2015), Philadelphia Marathon (2014), Singapore Sundown Marathon (2012), Singapore Standard Chartered Marathon (2010)  
Scuba diver: PADI certified advanced and open water diver, SDI certified nitrox diver

## References

Donald Davis (*co-primary*)  
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