

# Tianqi Li

Department of Economics - University of North Carolina at Chapel Hill  
Gardner Hall, Chapel Hill, NC 27516, U.S.A.  
tianqili@ad.unc.edu • www.tianqili.org

## Education

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**University of North Carolina at Chapel Hill**

2019 – 2025 (Expected)

Ph.D. Candidate in Economics

Committee: Andrii Babii, Peter Reinhard Hansen, Jonathan B. Hill (co-chair), Désiré Kédagni, Valentin Verdier (co-chair)

**Wuhan University**

2015 – 2019

B.A. in Economics and B.S. in Mathematics

## Fields on Interest

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High-dimensional Econometrics, Microeconometrics, Boundary Inference, Causal Inference

## Research

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### *Job Market Paper*

#### **"Demand Estimation with High-Dimensional Consumer Demographics"**

Random-coefficient multinomial logit models are widely applied to study discrete choices in economics. By assuming random coefficients for each individual, the models can account for unobserved individual heterogeneity and suggest more realistic substitution patterns, compared to standard logit models. In this paper, I find that random coefficients become undetectable (i.e., estimated variances are zero) even if they exist, as many observed individual covariates are incorporated. Having zero estimates of variances not only yields bias in estimating other parameters but also raises the concern of parameters on boundary. To address these issues, I propose  $l_1$ -regularized maximum likelihood estimation for simultaneous covariate selection, and develop a debiased machine learning estimator to correct regularization bias while accounting for parameter constraints, such as non-negativity of variance. I derive non-asymptotic probability bounds for the regularized estimator and limiting distributions for the debiased estimator. Finally, I validate the estimators with thorough Monte Carlo simulations, and illustrate the impacts of high-dimensional covariates in an application to soft-drink markets in North Carolina.

### *Publications*

**"A Bootstrapped Test of Covariance Stationarity Based on Walsh Functions"** with Jonathan B. Hill, *Bernoulli* (2024), forthcoming

**"Research Collaboration beyond the Boundary: Evidence from University Patents in China"** with Jingbo Cui and Zhenxuan Wang, *Journal of Regional Science* (2023), 63, 674-702

### *Working Papers*

**"High-dimensional Inference when the True Parameter is On or Near the Boundary"**, 2024

**"Regularized Extremum Estimators on the Boundary"** with Jonathan B. Hill, 2022

## Conferences and Presentations

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2024: Causal Inference Reading Group (UNC-CH), Financial Econometrics Workshop (UNC-CH), Triangle Econometrics Conference (NC State University)

2023: Duke Financial Econometrics Lunch Group Seminar (Duke University), Financial Econometrics Workshop (UNC-CH)

2020: Annual North American Meetings of Regional Science Association International (Online), Chinese Economists Society North America Conference (Online)

2019: IESR-HCEO Summer School and Best Paper Competition (Jinan University)

## Teaching

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### *Teaching Assistant*

- Econometrics for Ph.D. students (Econ 770) Fall 2020 to Fall 2024 (5 semesters)
- Applied Statistics and Econometrics for undergraduate (Econ 400) Summer 2022, Spring 2024
- Principles of Economics (Econ 101) Spring 2022
- Statistical and Empirical Data Analysis for undergraduate (Econ 470) Spring 2021
- Macroeconomic Topics for undergraduate (ECON 590) Spring 2020
- Applied Econometrics for undergraduate (ECON 570) Fall 2019, Spring 2020, Summer 2020

## Grants, Honors & Awards

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- Department Teaching Assistantship, UNC Department of Economics 2019 – 2025
- Thomas F. Ferdinand Summer Research Fellowship, UNC Graduate School 2023
- Georges Lurcy Fellowship in Economics, UNC Department of Economics 2022
- Graduate Summer Funding, UNC Department of Economics 2020 – 2021
- Meritorious Winner, COMAP's Mathematical Contest in Modeling 2018

## Skills

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- Languages: Chinese (native), English (fluent)
- Programming: Julia, R, Matlab, Stata, Slurm (clusters), Python

## Refereeing

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Journal of Regional Science

## References

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Andrii Babii  
Associate Professor of Economics  
UNC-Chapel Hill  
Department of Economics  
+1(919)843-9453  
babii.andrii@gmail.com

Jonathan B. Hill  
Professor of Economics  
UNC-Chapel Hill  
Department of Economics  
+1(919)966-2383  
jbhill@email.unc.edu

Valentin Verdier  
Associate Professor of Economics  
UNC-Chapel Hill  
Department of Economics  
+1(517)881-0834  
vverdier@email.unc.edu

Peter Reinhard Hansen  
Henry A. Latané Distinguished Professor of Economics  
UNC-Chapel Hill  
Department of Economics  
+1(919)445-9013  
hansen@unc.edu

Désiré Kédagni  
Assistant Professor of Economics  
UNC-Chapel Hill  
Department of Economics  
dkedagni@unc.edu