

## Tianyu Fan

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**Citizenship:** China

### **Fields of Concentration:**

Primary Field: Macroeconomics  
Secondary Field: International Trade, Political Economy

### **Qualifying Examinations Completed**

2022 (Oral): Macroeconomics, International Trade  
2021 (Written): Microeconomics; 2020 (Written): Macroeconomics (pre-entry)

**Dissertation Title:** *Essays in Macroeconomics*

### **Committee:**

Professor Michael Peters (Co-Chair)  
Professor Fabrizio Zilibotti (Co-Chair)  
Professor Pascual Restrepo

### **Education:**

Ph.D., Economics, Yale University, 2026 (expected)  
M.Phil., Economics, Yale University, 2023  
M.A., Economics, Yale University, 2022  
M.A., International and Development Economics, Yale University, 2019  
B.A., Economics, Peking University, 2018  
B.A., Law, China University of Political Science and Law, 2018

### **Fellowships, Honors and Awards:**

Ph.D. Dissertation Fellowship, Federal Reserve Bank of St. Louis, 2025  
Stripe Economics of AI Fellowship, Stripe, 2025  
The Sylff Fellowship, Yale University, 2023  
Carl Arvid Anderson Prize Fellowship, Yale University, 2023  
Doctoral Fellowship, Cowles Foundation Fellowship, Yale University, 2020 - 2026

**Teaching Experience:**

Fall 2024, Teaching Assistant to Pascual Restrepo and Fabrizio Zilibotti, Macroeconomics (PhD), Yale University

Fall 2023, Teaching Assistant to Zhen Huo and Fabrizio Zilibotti, Macroeconomics (PhD), Yale University

Spring 2023, Teaching Assistant to Michael Boozer, Advanced Development (Master), Yale University

Fall 2022, Teaching Assistant to Ana Cecilia Fieler, Growth and Macroeconomics (Master), Yale University

Fall 2017, Teaching Assistant to Ju Hu and Lixing Li, Intermediate Microeconomics (Undergraduate), Peking University

**Research Experience:**

Pre-doc Research Assistant to Prof. Fabrizio Zilibotti, Yale University, 2019-2020

**Publications:**

“Growing Like India: The Unequal Effects of Service-Led Growth” (2023) [with Michael Peters and Fabrizio Zilibotti], *Econometrica*, Vol 91, No 4.

**Working Papers:**

“The Labor Market Incidence of New Technologies” (October 2025), *Job Market Paper*

“The Geopolitical Determinants of Economic Growth, 1960-2024” (November 2025)

“Geopolitical Barriers to Globalization” (September 2025), with Mai Wo and Wei Xiang

**Work In Progress:**

“Partial Automation”, with Pascual Restrepo

“Anatomy of Geopolitical Dynamics”, with Jizhou Liu and Wei Xiang

“Measuring Inflation Inequality with Incomplete Prices”, with Olivia Ding and Kan Yao

**Seminar and Conference Presentations (reverse chronological order):**

2025: NEUDC 2025 (Tufts), The University of Hong Kong, Pan-Asian Macro/Finance Seminar, Growth and Development Conference (Minneapolis Fed), St. Louis Fed Dissertation Conference, CCER Summer Institute, Growth and Institution Conference (Tsinghua), CUFE

2024: The TRAIN Conference (Beijing)

2023: Peking University

**Referee Service:**

*American Economic Review: Insight, Journal of Comparative Economics, Macroeconomic Dynamics, Quarterly Journal of Economics*

**Languages:**

Chinese (native), English

### References:

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### Dissertation Abstract

Through both theoretical modeling and empirical analysis, my work investigates how technological progress, geopolitical forces, and structural transformation shape economic outcomes across countries and within societies.

#### **The Labor Market Incidence of New Technologies [Job Market Paper]**

This paper develops a framework for empirically estimating aggregate labor supply across occupations with flexible substitution patterns and applies it to study the incidence of automation and artificial intelligence in the U.S. labor market. Central to the analysis is the distance-dependent elasticity of substitution (DIDES), where worker substitutability between occupations declines with their distance in skill space. By mapping 306 occupations into cognitive, manual, and interpersonal skill dimensions, we estimate a low-dimensional latent skill model that preserves granular substitution patterns. We show that both automation and artificial intelligence cluster in skill-adjacent occupations, constraining employment adjustment and amplifying wage effects: 20–50% of labor demand shocks pass through to wages, while mobility recovers only 20% of wage losses.

#### **The Geopolitical Determinants of Economic Growth, 1960-2024**

This paper establishes geopolitical relations as a first-order determinant of economic growth. We construct a novel event-based measure of bilateral political alignment by employing large language models to compile and classify 373,020 geopolitical events across 193 countries from 1960 to 2024. This approach captures the precise timing and intensity of bilateral geopolitical dynamics. Exploiting within-country temporal variation with local projections, we find that a one-standard-deviation improvement in geopolitical relations increases GDP per capita by 10 percent over 20 years. These effects operate through domestic stability, investment, trade, and productivity. Geopolitical factors account for GDP variations ranging from -30 to +30 percent across countries and time periods.

#### **Geopolitical Barriers to Globalization**, with Mai Wo and Wei Xiang

This paper estimates and quantifies how geopolitical alignment shapes global trade. We construct a novel measure of bilateral alignment using large language models to compile 833,485 political events spanning 193 countries from 1950 to 2024. Trade flows track geopolitical alignment across time and countries. Using local projections within a gravity framework, we estimate that a

one-standard-deviation improvement in geopolitical alignment increases bilateral trade by 20 percent over ten years. Integrating estimates into a quantitative model, we find that deteriorating geopolitical relations have reduced global trade by 7 percentage points between 1995 and 2020, offsetting much of the gains from tariff reductions.

**Growing Like India: The Unequal Effects of Service-Led Growth**, with Michael Peters and Fabrizio Zilibotti, *Econometrica* 2023

Structural transformation in most currently developing countries takes the form of a rapid rise in services but limited industrialization. In this paper, we propose a new methodology to structurally estimate productivity growth in service industries that circumvents the notorious difficulties in measuring quality improvements. In our theory, the expansion of the service sector is both a consequence---due to income effects---and a cause--- due to productivity growth--- of the development process. We estimate the model using Indian household data. We find that productivity growth in non-tradable consumer services such as retail, restaurants, or residential real estate, was an important driver of structural transformation and rising living standards between 1987 and 2011. However, the welfare gains were heavily skewed toward high-income urban dwellers.

**Partial Automation**, with Pascual Restrepo

We introduce a general framework for analyzing the effects of partial automation (i.e., the creation of technology capable of automating some but not all components of a job) on within- and across- job wage inequality and the allocation of workers.

**Measuring Inflation Inequality with Incomplete Prices**, with Olivia Ding and Kan Yao

Poor U.S. households have faced higher inflation rates than rich households over the last four decades, but do unmeasured quality improvements offset this inequality? This paper develops a novel Engel curve approach to measure inflation inequality when official prices incompletely capture quality changes. Given price and income elasticities, variation in expenditure shares is sufficient to estimate inequality from unobserved quality improvements. Income elasticities are recovered from covariation between expenditure shares and household income, while price elasticities are estimated from covariation between expenditure shares and prices, using a latent separability structure with cost shifters as instruments. Applying this method to U.S. data (1984-2019), we find that unmeasured quality improvements exacerbate observed inflation inequality, implying official statistics understate inflation's regressivity.