

Yurou Gao

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EDUCATION

Duke University

09/2023 – 12/2024 (Expected)

Master of Arts in Economics

Honors: Duke Economics Master's Scholar Award (2023)

GPA: 3.728 / 4

- Math / Econometrics: Real Analysis, ODE&PDE, Econometrics (PhD level), Causal Inference,
- Economics / Politics Science: Macroecon Policy, Microecon Theory, Development Econ, Economy Growth, China S&T Policy and innovation

Australian National University

07/2018 – 12/2022

Bachelor of Economics / Bachelor of Statistics (Major in **Statistical Data Analytics**)

GPA: 6.63 / 7 | WES verified 4.0 / 4.0 | Average Mark: 82 (High Distinction)

- Economics / Econometrics: Macroecon, Microecon, Labor Econ, Behavioral Econ, Econometrics, Game Theory
- Math: Advanced Mathematics and Application, Applied Mathematics, Scientific Computing
- Computer Science: Programming for Scientists, Relational Databases, Data Management, Analysis and Security
- Statistics: Advance Statistical Learning, Big Data Statistics, Bayesian Data Analysis, Mathematical Statistics, Stochastic Process, Regression Modelling, Graphical Data Analysis, General Linear Models

Shanghai Jiao Tong University (Summer Research Program)

12/2019 – 01/2020

- Time Series & Random Processes in Linear Systems | Score: 99 / 100

RESEARCH ASSISTANT EXPERIENCES

Science and Technology Cooperation Studies

09/2024 – Present

Research Assistant

Led by Prof. Denis Simon at Duke University

- Developed qualitative framework for analyzing China's international S&T cooperation agreements (1949-present).
- Produced comprehensive weekly analyses of bilateral Sino-foreign S&T agreements across multiple countries, synthesizing information from academic journals, government sources and media to examine agreements, historical trends, drivers of collaboration and cooperation platforms. Contributed to forthcoming book manuscript.

Machine Learning in Asset Pricing Models (use R and Python)

04/2024 – 09/2024

Research Assistant

Led by Prof. Zongwu Cai at the University of Kansas

- Investigated AI and machine learning techniques (XGBoost, LSTM, and Transformer models) to enhance Fama-French factor models by capturing nonlinear relationships in high-dimensional financial time series.
- Analyzed financial and macroeconomic data spanning July 1926 to March 2024 across 100 stocks, addressing endogeneity and heteroskedasticity using Python. Implemented rigorous statistical inference procedures with robust statistical inference, cross-validation, and hypothesis testing to improve model accuracy and evaluate parameter stability, contributing to advanced panel data analysis for nonparametric estimation.

Macroeconomy and Policy Analysis

06/2022 – 08/2022

Researcher Assistant

Led by the Group of Macroeconomy and Policy at Bank of China Research Institute (China)

- Developed a qualitative framework for commodity market analysis across eight sectors, synthesizing interdisciplinary interrelations from both demand and supply perspectives in domestic and foreign markets. Delivered weekly commodity price trend analysis briefings. Took charge of the part of "A review of the global and Chinese macro-economy in the first half of 2022" and "Macroeconomic Outlook of the World and China in the Second Half of 2022"
- Participated in researching China's real estate market, contributing to the report "Real Estate Development Model: International Experience, China's Path, and Policy Enlightenment".
- Actively participated in the selection and compilation of heated topics of macroeconomics and policy trends in two issues of "Quick Review of Economic and Financial Hot Issues" and the data collection and compilation of research paper "Lessons from the Transformation and Upgrading of Japan's Industrial Chain".

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Machine Learning Applications in Macro Forecasting during the Pandemic (use R and Python) 06/2022 – 12/2022

Researcher Assistant

Led by Dr. Sibor Yan at UCLA

- Developed a hybrid framework combining classical time series analysis and machine learning, deriving convergence properties and asymptotic error bounds for forecasting during economic crises.
- Analyzed a 20-year U.S. macroeconomic panel dataset (13 variables) using LSTM networks, Bayesian VAR, Random Forest, Boost models, and ARIMA for comparative evaluation.
- Validated findings with Italian macroeconomic data via rolling-window forecasting, demonstrating LSTM's superior performance under structural breaks through sensitivity analysis.

State Information Center- Department of Economic Forecasting (China)

07/2021 – 10/2021

Researcher Assistant Led by Dr. Jiaqi Wei in State Information Center-Department of Economic Forecasting (China)

- Conducted multi-faceted comparisons of international experiences in productivity distribution adjustment, focusing on industrial development stages, spatial layouts, and governmental policy support.
- Collected data from national, provincial and municipal statistical yearbooks, as well as provincial and municipal "14th Five-Year Plan" to analyze the spatial layout of 6 types of manufacturing industries in the country, including general manufacturing, precision equipment, household appliances, high-end equipment, automobiles and semiconductors
- Co-authored the paper with Dr. Jiaqi Wei for "Several Conceptual Issues to be Clarified in Promoting the Transformation and Upgrading of the Manufacturing Industry" published in the *Economic Highlights*, No. 26, 2022.

INDIVIDUAL RESEARCH EXPERIENCES

Digital Economy and Economic Growth (use STATA)

02/2024-05/2024

Individual

Capstone Course Project on Development Economics at Duke University

- Developed mathematical extensions to the Solow growth model by incorporating data as a fourth production factor
- Constructed comprehensive panel dataset spanning 141 countries (2010-2022), collecting and harmonizing data on population dynamics, human capital accumulation, physical capital formation, and data traffic volumes.
- Applied advanced econometric techniques including two-way fixed effects panel regression, conducted robustness checks using synthetic control methods; paper titled "Rethinking Economic Growth by the Solow Model in the Digital Economy" received A+ for theoretical innovation and empirical rigor

Exchange Rate Dynamics Analysis: RMB Historical Patterns

01/2022 – 05/2022

Individual

Project under Department of Economic Forecasting, State Information Center in China

- Analyzed 73 years of RMB exchange rate trends (1949-2022) by synthesizing information from journals, identifying four key development stages.
- Estimated double logit model with heteroskedasticity-robust standard errors, quantifying RMB/USD exchange rate elasticity (0.4143% depreciation per 1% USD index increase post-2015); providing statistical evidence for exchange rate predictions and policy recommendations
- Published single author paper "Historical Evolution and Insights of RMB Exchange Rate Reform," in *Macro Policy Trends*, No. 25, 2022.

Time Series Analysis of the Effectiveness of the Two-Child Policy in China (use JMP)

12/2019 – 01/2020

Individual

Shanghai Jiao Tong University Time Series & Random Processes in Linear Systems Course Project

- Examined the historical aspects of China's one-child policy and defined its target demographic.
- Quantified policy impacts by developing heterogeneous time series models capturing rural-urban population dynamics: implemented I(2) process for rural areas and ARI(1,1) for urban regions
- Performed rigorous statistical inference through confidence interval estimation and hypothesis testing, demonstrating statistical insignificance of two-child policy effects across regional variations

SKILLS

Software: R (expert), Python (expert), STATA (medium), SQL (medium), Excel (medium), JMP (basic).

Language: Chinese (native), English (fluent)