

To Whom It May Concern,

I am a master's student in economics at the University of Texas at Austin and am expected to graduate in May 2022. I would like to apply for the PhD in Economics and discuss my **research experience, skill sets, and motivation** for your evaluation of my competency. Besides, the links¹ of **additional materials** (including a writing sample, sample codes, and a paper list) are attached to demonstrate my experience and potential.

Selected Research Experience: I have experience in macroeconomics, international economics, and applied finance, including both theoretical and empirical work.

- (1) As for **macroeconomics**, I worked as a RA at the University of Manitoba (in Canada) for Prof. Carlos Yezpe, whose project is 'International capital flows in emerging economies'. My main work includes replicating DSGE models by writing MATLAB (Dynare) codes and conducting empirical work to match the moments from data and models with Stata. This experience gets me access to cutting-edge macroeconomic research and enables me to finish most technical work for DSGE modeling and matching independently.
- (2) As for **international economics**, I am collaborating with Prof. Haitao Mao in Zhongnan University of Economics and Law (in China) and Prof. Dao-Zhi Zeng in Tohoku University (in Japan) to coauthor a paper (included as my writing sample). This paper connects indirectly additive preferences with international trade and endogenous growth, and thus presents a new channel by which trade liberalization can affect welfare. I've used Mathematica for the simulation in this paper and LaTeX to write the manuscript. This experience gets me involved in every stage of theoretical research in economics and makes me an independent researcher in trade theory beyond pure students.
- (3) Lastly, I worked as a research intern in a hedge fund in China. I focused on **applied finance** topics, including stock factors, dynamic option hedging and predicting stock prices with neural networks, and took data analysis work with Jupyter-Lab-based Python. This internship gives me access to data work on the dataset of GB size (especially the high-frequency financial data) with methods from time series analysis and deep learning (including some NLP techniques), which improves my skills for computer programming and statistical analysis.

Academic Training and Skill Sets: I have a Bachelor's degree in economics from Zhongnan University of Economics and Law and an ongoing Master's degree in economics from UT-Austin. I understand that besides knowledge of economics, becoming an economist requires a wide range of skills. So I always pay great attention to developing my mathematics, computer science, and communication skills.

¹ Link to Writing Sample: https://cheng-jipeng.github.io/cjpdoc/Writing_Sample_Jipeng_Cheng.pdf

Link to Code Samples: https://cheng-jipeng.github.io/cjpdoc/Code_Sample_Link+Paper_List_Jipeng_Cheng.pdf

- (1) For **training in economics**, I have taken Master's level courses in microeconomics, macroeconomics and econometrics, which provide the theoretical underpinnings of the economic theory or econometric methods and their applications to empirical work or actual data. I applied a wide range of econometric models to various datasets with Stata in econometric classes. I also expect to take a PhD course in asset pricing theory to strengthen my understanding of macroeconomics and finance from previous experience. I will take courses in machine learning and time series to enhance my empirical analysis skills.
- (2) I learned most **software packages and programming languages** that I've worked with on serious economic research or work in practice; besides, I gained experience in Mplus, SPSS, Eviews via course projects, undergraduate research initiatives, and competitions. Also, I receive training in Stata and R from graduate courses in econometrics and machine learning. I use Zotero and Markdown to manage literature and make notes as well.
- (3) To lay the mathematical foundation for economic research, I've taken a series of **math courses**: multivariate calculus, probability and statistics, linear algebra, differential equations, stochastic process, real analysis, optimization. Note that I regard math as the tool for economics and thus do not put in all of my time to pursue perfect grades; alternatively, I spend much time on seminars, academic projects, and research papers at the same time. I am also very comfortable with the math in my graduate-level courses and research.
- (4) As for **general** skills, I am consistently recognized as an excellent speaker by my audiences. For scholarly communication, I love teaching others and often help the study group review the course materials, and my presentation in class often receives praises from professors. Also, I am always the head of study groups or projects and thus get used to multitasking.

Motivation: It is **inequality** that is the topic that interests me most, and one of the starting points for me is the research about dynamic individual trade welfare, which requires knowledge about **calibration (or structural estimation), labor markets, and dynamic modeling** that I expect to learn during the PhD studies. Finally, I am eager to devote myself to an **academic career** and will seek a position in research institutions. Therefore, the PhD studies in top research institutions with top researchers matter a lot to me.

Thank you for your time and consideration. I look forward to speaking with you soon!

Sincerely,

Jipeng Cheng