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To
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138

February 9, 2023

Application for the Entrepreneurship Research Boot Camp 2023

Dear Admission Committee,

I am writing to apply for the NBER Entrepreneurship Research Boot Camp 2023. I learned of this opportunity through my current advisor, Prof. Daniel Yi Xu, who is also my recommendation letter writer. Currently, I am a third-year Econ Ph.D. student at Duke University, with a concentration on empirical industrial organization and corporate finance. Below, I will briefly discuss my research experience, research interests, as well as why I might be an ideal candidate for this opportunity.

My interest in the economics of entrepreneurship and entrepreneurial finance stems from my current research on the buyer-supplier relationship in the auto industry, a sector which is undergoing an epochal transformation from internal combustion engine (ICE) towards electric vehicles (EVs), with plenty of entrepreneurs entering the market. My current focus is on three directions: (1) The effect of geopolitical instability on firm's supply-chain location arrangement; (2) Firm boundary choices, specifically, firm's decision on vertical integration and potential pro-competitive and anti-competitive consequences; (3) Anti-competitive effect of cross-ownership in a vertical industry. Since this project is still in a very preliminary stage, one of my motivation for attending this boot comp is to explore potential directions that connect the entrepreneurship research with the reality in the EV industry.

Additional, I have some research interest related to leadership within organizations. In my joint work with Prof. Xiwei Yi, "Does it Pay to be Outspoken?", we investigate how CEOs' outspokenness is associated with the stock return and return volatility. To answer the research question, we construct a new measure of CEOs' talking style using machine learning based on earnings conference calls of S&P1500 companies. We find a steady decreasing trend on CEO outspokenness between 2002 to 2016, and CEOs' outspoken language is negatively associated with firms' stock price after an earnings conference call. Overall, this research is closely related to many classic research on leadership and organizational capital, such as Bertrand and Schoar (2003), Bandiera et al. (2020). I believe this boot camp will lead me to the frontier of this literature, and will definitely help me improve the paper.

Please do not hesitate to contact me with further questions, as I would welcome the chance to discuss my qualifications and interest in this boot camp. Thank you for considering my application, and I look forward to hearing from you.

Your Sincerely,

Boyang Bai

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Education

Duke University
Ph.D. in Economics, 2020 to 2025 (expected)
University of Wisconsin, Madison
M.S. in Economics, 2018 to 2020
Wuhan University
B.A. in Economics and B.S. in Mathematics, 2013 to 2017
Visiting Student at University of California, Berkeley, Spring 2017

Research Interests

Empirical Industrial Organization, Corporate Finance

Working Paper

"Does it Pay to be Outspoken?" with Xiwei Yi

Work in Progress

1. "Vertical Integration in the Electric Vehicle Industry"
2. "FinTech Platform Design and Investor Behavior: Evidence from Robinhood"
3. "The Trends of Vertical Integration and the Macroeconomic Implications" with Stephen Teng Sun

Research Experience

Research Assistant to Daniel Yi Xu and Emily Cuddy, Duke University, 2022-present
Research Assistant to Lorenzo Magnolfi, UW-Madison, 2019-2020
Research Assistant to Xiwei Yi, Peking University, 2018
Research Assistant to Zixuan (Kevin) Wang, Harvard Business School, 2017

Teaching Experience

Fuqua School of Business, Duke University

Teaching Assistant, Corporate Finance (MBA), Spring 2023

Department of Economics, Duke University

Teaching Assistant, Industrial Organization (PhD), Fall 2022

Teaching Assistant, Statistical Foundations of Econometrics and Data Science, Fall 2021, Spring 2022

Awards and Fellowships

Summer Research Fellowship, Duke University, 2021, 2022

Economics First Year PhD Fellowship, Duke University, 2020-2021

University Freshman Scholarship, Wuhan University, 2013

Professional Activities

NBER Digitization Tutorial, Spring 2023

Service

Mentor to First-year Ph.D. students, Department of Economics, Duke University, 2021-2023

Graduate Mentorship Program, Department of Economics, Duke University, Fall 2021, 2022

Skills

Programming: Python, Stata, Matlab, R, SQL

Language: English (Fluent), Chinese (Native)

February 8, 2023

Lists of PhD Courses (Duke University)

Microeconomics Analysis I, II
Macroeconomics Analysis I, II
Econometrics I, II
Dynamic Discrete Choice
Industrial Organization
Partial Identification: Theory and Applications in Industrial Organization
Finance I (Asset Pricing)
Empirical Corporate Finance
Special Topics in Quantitative Marketing

Statement of Purpose

Currently, I am a third-year Econ PhD student at Duke University with a focus on the interaction of industrial organization and corporate finance. I am interested in attending the NBER Entrepreneurship Research Boot Camp this summer, since I believe this would be an ideal opportunity for me to gain valuable insights in this field, and to expand my research skills and network. Below, I will briefly discuss my current and future research as well as my motivation for attending the boot camp.

Current and Future Research

My current research revolves around the buyer-supplier relationship in the auto industry, a sector that is undergoing an epochal shift from internal combustion engine (ICE) towards electric vehicles (EVs), with plenty of entrepreneurs entering the market. By assembling a rich dataset consisting of 1) global model-level car sales and productions and 2) buyer-supplier relationship regarding around 300 car components, my current focus is on three directions: (1) The effect of geopolitical instability on firm's supply-chain location arrangement; (2) Firm boundary choices (i.e., vertical integration) and potential pro-competitive and anti-competitive consequences; (3) Anti-competitive effect of cross-ownership in a vertical industry. In the future, I hope to explore potential directions that connect the entrepreneurship research with the reality in the EV industry.

Relevant to the above project, I have a joint work with Stephen Teng Sun, where we investigate the evolution of vertical integration for the economy and its potential implications. Though vertical integration is an essential concept in industrial organization, its evolution has not been well documented in the literature. Currently, we are exploiting micro data sets in two different contexts. In the first setting, we construct the vertical integration index based on National Establishment Time Series (NETS), a broad data set containing historical establishment-level ownership information in the U.S. economy, and the Input-Output table, which tracks the flow of products among industries in the production process. In the second setting, we use the Annual Survey of Industry (ASI) from India, which includes detailed product-level information about every establishment's intermediate inputs as well as outputs. In addition, given the growth of the common ownership literature, we are exploring the vertical integration trends through cross ownership as well, this could be related to some research in entrepreneurship finance, given that the equity of small firms are frequently hold by big players in the same market.

In another project, I investigate the role of fintech platform design in individual investors' stock-holding behavior. In recent year, the emergence of fintech platforms such as Robinhood, Webull has largely changed the brokerage industry. This project joins the debate over whether these popular trading platforms' failure are acting in the best interest of clients. At this stage, using stock popularity data from Robinhood, I am evaluating the consequence of the "trending list", a popular design element that gives users access to the list of popular trades on the platform. Based on quasi-random variation arising from a unique cutoff rule Robinhood followed, the preliminary results suggest that this design element might influence the securities that users buy by shaping their awareness set.

In addition, I have another research related to leadership within organizations. In my joint work with Xiwei Yi, "Does it Pay to be Outspoken?", we investigate how CEOs' outspokenness is associated with the stock return and return volatility. To answer the research question, we

construct a new measure of CEOs' talking style using machine learning based on earnings conference calls of S&P1500 companies. We find a steady decreasing trend on CEO outspokenness between 2002 to 2016, and CEOs' outspoken language is negatively associated with firms' stock price after an earnings conference call. Overall, this research is closely related to many classic research on leadership and organizational capital, such as Bertrand and Schoar (2003), Bandiera et al. (2020). I believe this boot camp will lead me to the frontier of this literature, and will definitely help me improve the paper.

Reasons for Attending the Boot Camp

Attending the NBER Entrepreneurship Research Boot Camp would be invaluable to advancing my current research agenda. I am particularly interested in exploring the connections between my current work and the entrepreneurship research. I can see there are many potential directions, for instance, there is a large literature in entrepreneurship investigating tech clusters. In the car industry, car parts suppliers tend to physically cluster together, it might be interesting to investigate its potential consequences.

Moreover, I am very interested to see different data sets as well as methodologies that have been used in the entrepreneurship and entrepreneurship finance area. Usually, the data sets about public firms are relatively easier to access, data set about small firms seems like a major barrier to enter this research field. In addition, I am interested in applying the methodology from IO to the entrepreneurship finance area, it would be very helpful to see how such approaches have been adopted by researchers in this field.

In conclusion, attending the NBER Entrepreneurship Research Boot Camp would be an important step towards achieving my research goals. It would provide me with the knowledge, skills, and network necessary to advance my understanding of the role of policy in promoting entrepreneurship and innovation. I am confident that this experience will contribute to my growth as a researcher and position me to make meaningful contributions to the field in the years to come.