Name: Haoran Wang

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School: University of Maryland, College Park

Area of Interest: Macroeconomics, Behavioral Economics, Firm Dynamics

Year of Entry into PhD program: 2021

Expected Year of Completion: 2027

Recommender: John Haltiwanger (halt@umd.edu)

Personal Statement

I am Haoran Wang, a fourth-year PhD student in economics at University of Maryland. I am writing to apply for the prestigious NBER Entrepreneurship Research Bootcamp.

My research focuses on the effect of informational and behavioral frictions on firm dynamics. My working paper, "*Implications of Narrow Framing for Firms' Behaviors*", studies how firms make multiple decisions under imperfect information sharing among managers. I model the firm as a team of managers who have a common objective, but make decisions individually and simultaneously, based on different, non-nested information sets, which I refer to as "narrow framing". I apply this framework to the joint dynamics of capital and labor and find that imperfect communication dampens the responsiveness of input choices to firm-level shocks disproportionally, which cannot be reproduced by standard full- or noisy-information models that assume common knowledge. A quantitative analysis using US public firm reveals that managers rely more heavily on manager-level private information in decision making than firm-level information, and the existence of imperfectly communicated noisy information helps match the pattern of relative misallocation between inputs, generates sizable aggregate TFP losses and changes the propagation of shocks significantly. Another work in progress of mine, "*Innovation under Knightian Uncertainty: Perspectives from Reinforcement Learning*", applies a novel reinforcement learning framework to study the role of Knightian uncertainty in firm's innovation decisions. Deviating from the standard assumption in the Schumpeterian growth literature that firms know the mapping between innovation expenditure and success probability of innovation, I allow the firms to choose innovation expenditure without knowing the exact functional form of this mapping, by experimenting with different levels of innovation expenditure and updating their beliefs about the value of these actions from the experienced return. I find that this reinforcement learning framework has the potential to explain the path dependence and concentration of innovation activities and generates interesting implications on aggregate growth and creative destruction rate.

I believe that attending the research bootcamp will be extremely beneficial to my research. The lectures and readings will help me better understand what cutting-edge research in entrepreneurship looks like and how these new insights can be incorporated into my research agenda. Moreover, I view the bootcamp as a precious opportunity to communicate with the people in this exciting field. During the bootcamp, I would have the chance to chat with the scholars that I highly admire in the field about my research and get their feedback. I would also be able to communicate with other PhD students, learn from their perspectives and find potential coauthoring opportunities. All of these experience will be extremely helpful for me as a dissertation writer and make me a better economist.

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February 25, 2025

Letter of Recommendation for **Haoran Wang**:

I am happy to write a letter on behalf of Haoran Wang who has applied to participate in the NBER Entrepreneurship Bootcamp. Haoran is an exceptional candidate. In my view, he ranks amongst the very best students that I have advised over the last 30 years at this stage of his graduate career. He is in his fourth year with exceptional performance in courses and is beginning to show the type of creativity and skills that suggest he will be an outstanding scholar. He is very bright, full of ideas, is a very hard worker, and is very much a self-starter. He has strong economic intuition, great technical skills for crafting a model and solving it both analytically and numerically. He is beginning to develop excellent applied data skills.

His third year paper is very creative and technically sophisticated. He has developed a framework to explore the nature and implications of information frictions within firms where different decision makers (e.g., managers) within the firm have disparate information. In his framework, each manager has perfect information about decision states directly related to their own decision but imperfect information about the decision states of others. He denotes this narrow framing and shows that taking into account narrow framing within the firm yields novel sources of misallocation and interesting and testable implications of firm dynamics. He is planning on testing the model implications using US firm level data from the US Bureau of the Census.

In short, I think he would be a superb candidate for participation in the bootcamp. As hopefully the above remarks make clear, he has exceptional skills and creativity. He would benefit tremendously from the meeting and also be a key contributor to the discussions. Overall, if not clear already, I give him my highest recommendation.

Sincerely,

John C. Haltiwanger

John C. Haltiwanger
Distinguished University Professor