Yunbo Liu

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Dear NBER Entrepreneurship Working Group,

I'm a second year PhD student in the real estate and finance program at UC Berkeley. I'm interested in being part of the 13th Entrepreneurship Research Boot Camp (ERBC) this coming summer.

After 2 years of coursework training in my PhD program, it is the high time to start working on my own research projects and hopefully making these projects part of my thesis. Entrepreneurial finance has been my research interest and I have some ideas exploring in this field (details in my CV and essay).

Berkeley has always been a school active in the field of entrepreneurship. Professors from real estate, economics, finance, IEOR and other related departments work together on the frontier of innovation activities. Besides my background in real estate made interdisciplinary projects possible. If being admitted to this bootcamp, I'm confident that I will contribute to this wonderful community.

Thank you so much for your attention and efforts!

Best,

Yunbo

Reference:

Professor Nancy Wallace

Lisle and Roslyn Payne Chair in Real Estate Capital Markets

Haas School of Business

UC Berkeley

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Yunbo Liu

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Education

PhD in Real Estate and Finance, University of California Berkeley, in progress

MA in Financial Economics , Duke University, 2018

BA in Finance, BS in Psychology and Cognitive Science , Peking University, 2016

Visiting Studies, University of Virginia, 2014

Research Interest

Real Estate, Household Finance, Entrepreneurial Finance, Banking

Research Experience

UC Berkeley
RA for **Nancy Wallace** and **Nick Tsivanidis**, working on housing price and tax information, wrote web scrapers and developed python programs to deal with gigabytes sized data.

Duke University
RA for **Manuel Adelino, David Robinson** and **William McCartney**, worked on topics related to banking, entrepreneurial nance and real estate. Pre-processed datasets of housing, mortgage, patent, small business formation etc.

Peking University
Worked with **Longkai Zhao**, explored art market microstructure and asset price implications.

University of Virginia
RA for **Charles Holt**, assisted experiments, estimation and book chapter editing.

Teaching and Service

UC Berkeley
Teaching Assistant for undergraduate Real Estate Finance with Prof. Nancy Wallace
Reader for MBA Asset Management with Prof. Sam Olesky

Duke University
Data research consultant at Social Science Research Institute (SSRI).
Supervised by Alexandra Cooper, solving statistical problems of social science researchers

Peking University
Teaching Assistant for undergraduate Introduction to Finance (with Prof. Longkai Zhao)
Teaching Assistant for undergraduate Intermediate Microeconomics (with Prof Lian Zhou)

Presentations and Workshops

TextXD Natual Language Processing Workshops by BIDS (Berkeley, 2019)
Mitsui Summer School on Structural Estimation in Corporate Finance (Ann Arbor, 2019)
Second Annual Forum for young economics researchers at CUFE (Beijing, 2016)
Sixth Annual Forum for undergraduate economics research at SUFE (Shanghai, 2016)

Awards and Honors

UC Berkeley: Haas School of Business Fellowship (2018-)
Duke University: Merit Scholar Award (2016)(2017)
Peking University: Honored Graduates, Honored Student, Caofengqi Scholarship for Research in Finance(2015), Guanghua Scholarship(2013) Deans Scholarship Outstanding Paper Award (2016)

Skills

Programming
Python, MATLAB, C++, HTML/JavaScript

Data Analysis
Stata, PSQL, R

Language
Chinese (native), Japanese(working proficiency), Korean (conversational)

List of PhD Courses Taken **Yunbo Liu** **For application use only**

At UC Berkeley

Course Name	Course Number	Time	Instructor
Mathematical Tools for Economics	ECON 204	18 Summer	Chris Shannon
Economic Theory	ECON 201A	18 Fall	David Ahn
Psychology and Economics	ECON 219A	18 Fall	Dmitry Taubinsky
Applied Econometrics	ECON 244	18 Fall	Patrick Kline, Christopher Walters
Empirical Asset Pricing	PHDBA 239C	18 Fall	Martin Lettau, Micheal Bauer
Corporate Finance Theory	PHDBA 239DB	18 Fall	Brett Green, Dmitry Livdan
Economic Theory	ECON 201B	19 Spring	Shachar Kariv, Haluk Ergin
Econometrics	ECON 240B	19 Spring	James Powell
Stochastic Calculus	MFE 230Q	19 Spring	Dmitry Livdan
Market Microstructure	PHDBA 239DA	19 Spring	Christine Parlour, Terrace Hendershott
Research in Real Estate	PHDBA 289A	19 Spring	Nancy Wallace, Amir Kermani, Hoai-Luu Nguyen, Victor Couture
Fixed Income Analysis	MFE 230I	19 Summer	Richard Stanton
Advanced Macroeconomics	ECON 236A	19 Fall	Emi Nakamura
Asset Pricing Theory	PHDBA 239A	19 Fall	Nicolae Garleanu
Empirical Corporate Finance	PHDBA 239F	19 Fall	Ulrike Malmendier

At Duke University

Course Name	Course Number	Time	Instructor
Asset Pricing Theory	BA 951	16 Fall	Lukas Schmid
Empirical Corporate Finance	BA 952	17 Spring	Alon Brav, John Graham
Empirical Asset Pricing	BA 954	17 Spring	Ravi Bansal

Essay for Entrepreneurship Research Boot Camp

Yunbo Liu

Introduction

I'm a second year PhD student in the Real Estate and Finance program at UC Berkeley Haas School of Business, under the supervise of professor Nancy Wallace.

I first heard about the Entrepreneurship research bootcamp when I was working with Professor David Robinson at Duke as a master student. Last year a couple of my friends (Scarlet Chen, Yuan Shi etc) joined the bootcamp last year and told me this is a precious opportunity I should not miss. This year I'm at the right time of finishing my PhD coursework and starting my own thesis. Being able to participate in the discussion of current entrepreneurship research with the most insightful people in this field would be a great chance.

Following is a brief description about my past experience, current project and future plan about research in entrepreneurship, which explains my passion and capability to do research in this field.

Research Experience in Entrepreneurship

When I was doing my master at Duke University, I was working with professor David Robinson and Manuel Adelino on different projects about innovation. One of the projects was about the causal relationship between media exposure and entrepreneurial behavior. I was in charge of assembling different data sources including SBA records, USPTO patents and NETS establishment data. I also helped collecting the geographical information of registered establishments at NC and SC governments around the city of Charlotte, NC, to understand the potential channels explaining entrepreneurial opportunities near state boarder.

These projects really opened the door of entrepreneurship research to me and the more I explore the more I find this field fascinating.

Current Research Projects

After starting my PhD at UC Berkeley, I've met more faculty and colleagues working with entrepreneurship. Currently I have the following projects at the very beginning stage that are related to entrepreneurship.

In one project with my colleague Can Huang, we are interested in how failure affect an entrepreneur's behavior. As failure being quite common phenomenon, we ask how the choice is being made after failing to start a business. We are able to track founders of those failed business captured by datasets like crunchbase and match the record with LinkedIn or other sources to reveal their career path. They we are trying to find an identification strategy of exogenous failure to separate volunteered failures. Finally we should be able to answer the causal relationship between failing a startup and ones' human capital.

Another project on my current agenda is exploring the Fintech lenders in mortgage market. With the development of information technology, online underwriting became possible and prevalent in the mortgage market. However they are criticized of opacity or discriminating behavior, as well as poor risk management. There are papers comparing issued mortgage from banks and non-banks in HMDA, and using FOIA request of public documents as a proxy for call reports to reveal their capital structure. I'm interested in how Fintech mortgage underwriters compete with banks in the mortgage product market. i.e. how their cost structure, menu set-up and customer relationship management model different from each other. Recently there is news saying FHLB is considering extending their membership to non-banks, which raised lots of debate. I'm hoping my research will help better understand the costs and benefits between cheaper funding and heavier regulation.

Future Research Plan

My background in real estate enables me to work on the interaction between real estate market and entrepreneurship. Apart from the stream of literature on home equity channel of entrepreneurship, clusters etc, I'm also curious about the effect of entrepreneurial activities on housing, and innovative housing solutions like Airbnb and online mortgage underwriting.

As a student at Berkeley, I also have the advantage of reaching out to researchers in other fields (like management, strategy and engineering) to answer a question in entrepreneurship from different perspectives. For example I'm a close friend with Matteo Tranchero at MORS department. He always inspires me with recent interesting stylized facts about innovation that are captured by their group. We are both very optimistic about coming up with a project in the near future.

Finally my undergraduate school, Peking University, is a leading institute in the research of innovation activities in China, with a group of active researchers (like professor Xiaobo Zhang) and comprehensive dataset available. I'm looking forward to opportunities to work with Chinese researchers to answer important questions that may have a more meaningful setup in China.

Summary

As a second year PhD student, I'm at the perfect timing of being both well-trained for economic research techniques and open-minded for any research projects coming up. My past experience nurtured my interest and capability of doing entrepreneurship research, my current projects and resources enable me to see a promising vision of entrepreneurship research in the future. I'm eager to be part of this community of researchers and help create this future.

I'm very grateful of the NBER Entrepreneurship Working Group and the Kauffman Foundation for providing this excellent opportunity. I'll do my best to contribute if possible.

UNIVERSITY OF CALIFORNIA
BERKELEY

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March 25, 2020

Selection Committee NBER Entrepreneurship Bootcamp:
NBER
Cambridge, Massachusetts

To Whom It May Concern:

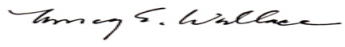
I would like to highly recommend **Yunbo Liu** as a very qualified and deserving applicant for the NBER Entrepreneurship Bootcamp this July. Yunbo is a second-year student in the Finance and Real Estate PhD program at Haas and he will have just completed his qualifying exams as of the first week in June. He has been a successful student and he is deeply interested in areas of entrepreneurship in finance. He has excellent empirical skills and he is hoping to further his understanding of key topics in the field as well as fruitful data sources. He worked for me last summer on a project focused on the general equilibrium effects of Proposition 13 in California housing markets. Yunbo's task was to determine the house-by-house disparities in property tax payments compared to the underlying market value of each home using a geospatial data set and valuation models that we have developed here in our Real Estate and Financial Markets lab. The next phase of the project will involve the use of Infutor data to measure the bequest distortions of proposition 13 (the tax basis can be bequeathed twice) and an application of structural models to decompose the incidence of the tax benefits both geographically and over the income distribution. I have found his work to be consistently of high quality and accurate, so I have been able to give him considerable latitude with the dataset construction.

Currently, Yunbo's own research interests have focused on two recent projects one of which is likely to become his second-year paper due in September. The first project looks at mortgage product and underwriting technology differentiation between banks and nonbanks in the US . The project marshals a large national data set of loan and firm-level mortgage products and a recent survey of the underwriting technology used by 2,098 of the largest lenders that can be used to identify platform versus non-platform lenders. He is struggling right now with identification, however, I anticipate that a solution is feasible and that he will be able to apply a structural model to explore technology and consumer demand changes on the industrial

organization of the mortgage market. His second project is with another graduate student and together they are looking at the effect of failure on entrepreneurs. Using a panel of crunchbase data, they have identified startups that have gone bankrupt. Then using a variety of other data sources, they are tracking the next career steps of the entrepreneurs that ran the failed businesses. They hope to determine whether the entrepreneurs moved to paycheck-type employment or attempted another startup. If the move is to another startup, they are seeking to determine whether their prior failure experiences affected investors' valuations. Both of these projects highlight Yunbo's significant analysis skills with large data sets and his ability to identify potentially interesting problems. In my opinion, this is exactly the time in his program where the exposure to the NBER entrepreneurship camp could be the most valuable.

Again, I highly recommend Yunbo Liu to you for admission to the NBER Entrepreneurship Bootcamp this summer. From my experience of his talents and his research interests, he is a highly suitable candidate.

Sincerely,



Nancy Wallace
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