David Robinson
Fuqua School of Business
Duke University
100 Fuqua Drive
Durham, NC
USA
davidr@duke.edu

Dear Prof. Robinson,

My name is Xiang Zheng, and I am a Ph.D. Candidate in Finance from Boston College. I am writing to apply for the NBER Entrepreneurship Research Boot Camp 2019. Included in the application are my CV, an essay summarizing my current research, and a reference letter by my dissertation advisor, Professor Thomas Chemmanur.

Thank you very much for your consideration!

Sincerely,
Xiang Zheng
Ph.D. Candidate in Finance
Boston College
zhengxr@bc.edu

Xiang Zheng

Last updated: March 2019

Boston College
Carroll School of Management
140 Commonwealth Avenue
Chestnut Hill, MA 02467

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Phone: 857-400-4313
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Education

Ph.D. Finance, Carroll School of Management, Boston College, 2016 – 2021 (expected)
- Dissertation Advisors: Thomas J. Chemmanur
- GPA: 3.92/4.00

M.A. Economics (with honors), Central University of Finance and Economics, 2012 – 2015

B.Eng. Mechanical Engineering, Zhejiang University of Technology, 2008 – 2012

Research Interests

Entrepreneurial Finance, Innovation and Applied Machine Learning

Working In Progress

Can Innovation Screening be Improved? A Machine Learning Analysis with Implications for Firm Performance

Presented at: Boston College

Working Papers

How Does Greater Bank Competition Affect Borrower Screening? Evidence from a Natural Experiment Based on China's WTO Entry, with Thomas J. Chemmanur, Jiaqi Qin, Yan Sun and Qianqian Yu, 2018

Presented at: Boston College, FMA 2018

Teaching Assistant

Boston College
- Basic Finance (Undergraduate), Prof. Francesco D'Acunto, Spring 2019
- Doctoral Seminar in Corporate Finance Theory (PhD), Prof. Thomas Chemmanur, Spring 2018
- Fixed Income Analysis (MBA/MSF), Prof. Steve Xia, Spring 2018
- Corporate Valuation and Restructure (MBA), Prof. Edith Hotchkiss, Fall 2017 and Fall 2018
- Corporate Financial Strategies (Undergraduate), Prof. Edith Hotchkiss, Fall 2017

Research Experience

Research Assistant for Prof. Francesco D'Acunto, Boston College, Fall 2018
Research Assistant for Prof. Thomas Chemmanur, Boston College, Spring 2018
Research Assistant for Prof. Edith Hotchkiss, Boston College, Spring 2017 and Spring 2019

Presentations

2019: Boston College (PhD Brownbag)
2018: Boston College (PhD Brownbag × 2), FMA (San Diego)

Honors & Awards

AFA Student Travel Grant, American Finance Association, 2018
Doctoral Fellowship, Carroll School of Management, Boston College, 2016 – present
Honors Thesis, Central University of Finance and Economics, 2015
National Scholarship, Central University of Finance and Economics, 2013
Academic Excellence Scholarship, Zhejiang University of Technology, 2009 – 2011

Professional Activities

Referee: *Journal of Banking and Finance*

PRE-DOCTORAL PUBLICATION

No Longer Left-behind: the Impact of Return Migrant Parents on Children's Performance, with Li Yu and Zhiqiang Liu

China Economic Review (2018), 49, pp.184-196.

Lose to Win: Entrepreneurship of Returned Migrants in China, with Li Yu, Wenwei Li and Xundong Yin

The Annals of Regional Sciences (2017), 58(2), pp.341-374.

MISCELLANEOUS

Programming: R, Stata, Python, Linux

Language: English (fluent), Chinese (native)

Course List

Year	Course	Course Title	Grade
2016 Fall	ECON774001	Microeconomic Theory I	A−
2016 Fall	ECON777001	Statistics	A
2016 Fall	MFIN115104	Investments	A
2017 Spring	ECON774101	Microeconomic Theory II	A−
2017 Spring	ECON777201	Econometric Methods	A
2017 Spring	MFIN888101	Advance Corporate Finance	A
2017 Spring	MFIN889001	Ph.D. Seminar: Capital Markets	A
2017 Spring	MFIN889101	Ph.D. Seminar: Corporate Finance	A
2017 Fall	MFIN886301	Ph.D. Seminar: Asset Pricing	A
2017 Fall	MFIN888001	Fixed Income Analysis	A
2017 Fall	MFIN889501	Ph.D. Seminar: Advanced Topics in Corporate Finance	A
2018 Spring	ACCT889101	Ph.D. Seminar: Empirical Topics in Accounting	A
2018 Spring	MFIN888501	Ph.D. Seminar: Advanced Topics in Asset Pricing	A−
2018 Spring	MFIN889901	Directed Study: Machine Learning	A

Research overview

Xiang Zheng
Ph.D. Candidate in Finance
Boston College
140 Commonwealth Avenue
Chestnut Hill, MA 02467

My primary areas of research are empirical entrepreneurial finance and innovation. One common theme of my papers is to empirically identify what economic and financial factor affects entrepreneurship and how to efficiently allocate economic resources to firms with higher innovation productivity. I am also interested in the applications of new statistical techniques such as machine learning to analyze research questions in the area of entrepreneurial finance.

One of my papers explores the relationship between rural to urban migration and entrepreneurship in China and find strong evidence of exotic migration bias in entrepreneurship. I compare entrepreneurship between returning migrants who used to work in a province other than their home province and migrants whose work experience is limited to their home province. Migrants who leave their home province lose rooted social networks and immediate support from relatives and friends but may potentially gain new social networks, human capital, and financial capital, which may enable them to enter entrepreneurship more easily in the future. I also show that returning migrants in Eastern China accumulate greater human and social capital, have more capital for self-financing and are consequently more likely to start a business compared to migrants in Western China.

My third-year paper uses the machine learning technique to reexamine patent applications and shows the economic consequence of inefficient screenings of patents. In this paper, I analyze whether the current patent examination process in the US can be improved in terms of granting only better quality patents, leading to an improved allocation of economic resources. I develop a

machine learning algorithm to re-evaluate the patents granted under the current patent examination process and show that the efficiency of the current screening process can indeed be improved using my machine learning algorithm. The improvement is large and significant, ranging from 1.7% to 32.8% improvement in generality based on the comparison between my algorithms to examiners in different leniency quintiles. I also show that better patent screening efficiency increases subsequent firm operating performance, developing an ex-ante measure of patent quality. In the near future, I plan to study whether entrepreneurial firms having better patents according to my measure are more likely to receive venture capital funding, and also whether such firms are more likely to have a successful exit (IPO or acquisition).

The NBER Entrepreneurship Research Boot Camp would be a great opportunity for me to dive deeply into the literature of this area and to learn from both renowned professors and talented Ph.D. peers from other institutions.

BOSTON COLLEGE

Department of Finance, 440 Fulton Hall
The Wallace E. Carroll School of Management
Chestnut Hill, MA 02467

Brett Maranjian
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138, US

March 25, 2019

Dear Brett:

I am writing to recommend one of our doctoral students, Xiang Zheng, for the NBER Entrepreneurship Boot Camp this summer. I am the chair of Xiang's Ph. D. dissertation committee (i.e., his main Ph.D. dissertation advisor or supervisor). Xiang is currently in his third year in the Boston College Ph.D. program in Finance, and is working on his main dissertation (solo-authored) paper.

Xiang has two papers relevant to the area of entrepreneurship, one using Chinese data and another using US data. His paper using Chinese data explores the relationship between rural to urban migration and entrepreneurship in China and documents evidence of exotic migration bias in entrepreneurship. He compares entrepreneurship between returning migrants who used to work in a province other than their home province and migrants whose work experience is limited to their home province. Migrants who leave their home province lose rooted social networks and immediate support from relatives and friends but may potentially gain new social networks, human capital, and financial capital, which may enable them to enter entrepreneurship more easily in the future. Xiang shows that returning migrants in Eastern China accumulate greater human and social capital, have more capital for self-financing, and are consequently more likely to start a business compared to migrants in Western China.

Xiang's research paper using US data uses machine learning techniques to reexamine patent applications and shows the economic consequences of inefficient screenings of patents. In this paper, he analyzes whether the current patent examination process in the U.S. can be improved in terms of granting higher quality patents on average, leading to an improved allocation of economic resources. He develops a machine learning algorithm to re-evaluate the

patents granted under the current patent examination process and shows that the efficiency of the current screening process can indeed be improved using his machine learning algorithm. He shows that improvements in screening due to his algorithm (over the current patent screening system) can be potentially large and significant, ranging from 1.7% to 32.8% improvement in patent generality on average. He has also developed an *ex ante* measure of patent quality.

Xiang has validated his algorithm using the performance of firms to which patents were granted, and shows that better patent screening efficiency increases subsequent firm operating performance. His plan is now to take the paper in the direction of entrepreneurial finance, and to show that entrepreneurial firms having better patents according to his patent quality measure are more likely to receive venture capital funding and also more likely to have a successful exit (IPO or acquisition).

Having worked closely with him, I can say that Xiang is an extremely bright scholar, who shows every sign of becoming a top quality researcher in entrepreneurial finance and innovation. I have absolutely no doubt about his ability to bring his various research projects to a successful fruition. He took two of my Ph.D. classes in Corporate Finance, and did exceptionally well in both classes. In the finance Ph. D. comprehensive exam, he did very well, and was awarded a "High Pass." He has made excellent progress as an academic scholar in our Ph.D. program. He also has done several presentations of some of his other academic research in various classes and seminars at Boston College and at conferences outside, and I have found them also to be of very high quality.

In summary, I would say that Xiang is an ideal candidate to benefit from the NBER Entrepreneurship Boot Camp Program, since he is a very smart researcher working in an area which is of tremendous interest to entrepreneurs, venture capitalists, and angels. I therefore feel comfortable in recommending him strongly for NBER Entrepreneurship Boot Camp. If you have any questions about Xiang, please feel free to call (Phone: 617 552 3980) or e-mail me (chemmanu@bc.edu).



Thomas J. Chemmanur
Professor of Finance and Hillenbrand Distinguished Fellow
e-mail: chemmanu@bc.edu