BOSTON COLLEGE

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Chestnut Hill, MA 02467

Brett Maranjian
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138, US
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March 25, 2015

Dear Brett:

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

I have co-authored one paper with Qianqian (joint with Karthik Krishnan of Northeastern University and Lei Kong of Boston College) titled, **"Top Management Human Capital, Inventor Mobility, and Corporate Innovation."** In this paper, we analyze the effect of the human capital or "quality" of the top management of a firm on its innovation activities. We extract a "management quality factor" using common factor analysis on various individual proxies for the quality of a firm's management team, such as management team size, fraction of managers with MBAs, the average employment- and education-based connections of each manager in the management team, fraction of members with prior work experience in a top management position, the average number of prior board positions that each manager serves on, and the fraction of managers with doctoral degrees. We find that firms with higher quality management teams not only invest more in innovation (as measured by R&D expenditures), but also have greater quantity and quality of innovation, as measured by the number of patents and citations per patent, respectively. We control for the endogenous matching of higher quality managers and higher quality firms using an instrumental variable analysis where we use a function of the number of top managers who faced Vietnam War era drafts (and therefore had an incentive to go to graduate school to get a draft deferment) as an instrument for top management human capital.

We also show that an important channel through which higher management quality firms achieve greater innovation success is by hiring a larger number of inventors (controlling for R&D expenditures), and also by hiring higher quality inventors (as measured by their prior citations per patent record). Finally, we show that firms with higher quality managements are able to develop a larger number of both exploratory and exploitative innovations. This paper is currently under review at the *Review of Financial Studies.*

Qianqian's main dissertation paper is on venture capital and its role in helping entrepreneurial firms succeed in the product market. While there is some existing literature in the area (see Hellmann and Puri (RFS, 2000) for a prominent example), Qianqian hopes to make a significant additional contribution to entrepreneurial finance in this paper, making use of some hand-collected data on various aspects of venture-backed private firms and their behavior in the product market.

Having worked closely with her, I can say that Qianqian 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 her ability to bring her various research projects to a successful fruition. She took two of my Ph.D. classes in Corporate Finance, and did exceptionally well in both classes. In the finance Ph. D. comprehensive exam, she did very well, and was awarded a "High Pass." She has made excellent progress as an academic scholar in our Ph.D. program. She also has done several presentations of some of her 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. Qianqian is expected to be in the job market in slightly more than a year's time.

In summary, I would say that Qianqian is an ideal candidate to benefit from the NBER Entrepreneurship Boot Camp Program, since she 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 her strongly for NBER Entrepreneurship Boot Camp. If you have any questions about Qianqian, please feel free to call (Phone: 617 552 3980) or e-mail me (chemmanu@bc.edu).



Thomas J. Chemmanur
Professor of Finance
e-mail: chemmanu@bc.edu

March 25, 2015

RE: Application for the NBER Entrepreneurship Research Boot Camp

Dear madam or sir,

I am Qianqian Yu, a third-year Ph.D. student in Finance at Boston College. I am interested to learn that the NEBR Entrepreneurship Research Boot Camp is calling for applicants and hereby sending you my application.

My primary research areas are entrepreneurial finance and corporate governance, and specifically, corporate innovation and venture capital. Ever since I entered the Ph.D. in Finance program, I have been trying to enrich my understanding into the entrepreneurial finance area and to develop analytical and empirical skills through taking courses and attending seminars. After completing course work, I have actively engaged in research projects. Joint with my advisor, Thomas Chemmanur, I have recently finished a paper that analyzes the effect of the human capital of the top management of a firm on its innovative activities. Currently, I am working on another project that aims to add to our understanding of how venture capital investments may affect the success of portfolio companies in the product market.

I have gained considerable exposure in entrepreneurship from the course work and research experience. I am intrigued by the entrepreneurial finance area and motivated to further enrich my insights and develop expertise in this area for further research. I find that the NBER boot camp suits my objectives and needs perfectly. I firmly believe that I would benefit a lot from the boot camp, which covers cutting-edge research topics and equips the participants with the required knowledge and skills for conducting research in this area.

Enclosed are my curriculum vitae, a list of Ph.D. courses that I have completed, and an essay explaining why I want to attend the boot camp. A recommendation letter will be sent under separate cover by my Ph.D. advisor, Thomas Chemmanur. Please do not hesitate to contact me if you have any questions. Your favorable consideration will be really appreciated.

Sincerely,

Qianqian Yu

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Reference for the recommendation letter writer:

Thomas J. Chemmanur

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QIANQIAN YU

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EDUCATION

Boston College, Carroll of Management of Management — Boston, US
PhD Candidate in Finance — September 2012-present
University of British Columbia, Sauder School of Business — Vancouver, Canada
M.Sc. in Finance — September 2010-June 2012
University of British Columbia, **Department of Economics** — Vancouver, Canada
M.A. in Economics — September 2009 – August 2010
Beijing Foreign Studies University, International Business School — Beijing, China
B.A. in Finance (Major: Finance; Minor: English), with distinction — September 2005- July 2009

RESEARCH INTERESTS

Entrepreneurial Finance, Venture Capital, Innovation, and Corporate Governance

WORKING PAPERS

Top Management Human Capital, Inventor Mobility, and Corporate Innovation, with Thomas J. Chemmanur, Lei Kong, and Karthik Krishnan.

Venture Capital Backing, Media Coverage, and IPO Valuation, with Thomas J. Chemmanur, Elena Loutskina, and Karthik Krishnan.

TEACHING

Investments (MBA), Teaching Assistant, UBC — 2011-2012
International Markets and Institutions (Undergraduate), Teaching Assistant, UBC — 2010-2011
Principles of Macroeconomics (Undergraduate), Teaching Assistant, UBC — 2009-2010

HONORS AND AWARDS

Doctoral Fellowship, Carroll School of Management, Boston College — 2012-present
Graduate Assistantship, University of British Columbia — 2009-2012
Outstanding College Graduate of Beijing, Beijing Municipal Education Commission — 2009
Best B.A. Thesis, Beijing Foreign Studies University — 2009
Scholarship for Academic Excellence, Beijing Foreign Studies University — 2005-2008

CONFERNCE PARTICIPATION

Southwestern Finance Association Annual Conference (presenter and discussant), New Orleans — 2012

SKILLS

Computer Languages: SAS, STATA, MATLAB
Language: Chinese Mandarin (Native), English (fluent)

PhD courses completed at Boston College (Ph.D. in Finance)

Courses	Instructors
Theoretical Corporate Finance	Thomas Chemmanur
Empirical Corporate Finance	Philip Strahan
Theoretical Asset Pricing	David Chapman
Empirical Asset Pricing	Pierluigi Balduzzi
Dissertation Topics in Corporate Finance	Thomas Chemmanur
Empirical Topics in Accounting I	Sugata Roychowdhury
Math for Economists	Peter Ireland
Microeconomic Theory I	Marvin Kraus and Hideo Konishi
Microeconomic Theory II	Uzi Segal and Utku Unver
Econometric Methods	Arthur Lewbel
Applied Econometrics	Christopher Baum

PhD courses completed at University of British Columbia (M.Sc. in Finance)

Courses	Instructors
Theory of Finance	Alan Kraus
Advanced Topics in Theoretical Corporate Finance	Ron Giammarino and Robert Heinkel
Advanced Topics in Empirical Corporate Finance	Adlai Fisher and Murray Carlson
Advanced Topics in Theoretical Asset Pricing	Lorenzo Garlappi
Advanced Topics in Empirical Asset Pricing	Adlai Fisher and Murray Carlson
Advanced Topics in Policy Analysis	Ralph Winter
Topics in Business Administration: Stock Market Inefficiency	Russell Lundholm

Why I Want to Attend the Boot Camp

The first time that I have ever thought of the relationship between finance and entrepreneurship dated back to a lecture of labor economics when I was doing my master's degree at UBC. At that time, we were discussing the paper of "The Allocation of Talent: Implications for Growth" by Murphy, Shleifer and Vishny (QJE, 1991). They establish a model such that a country's most talented people can spread their ability advantage over a large scale, innovate and foster growth if they become entrepreneurs; however, if these people become rent seekers such as financial experts or bankers, they only redistribute wealth and reduce growth. I found their findings really interesting but also surprising and was eager to know whether and how finance might instead add value to entrepreneurial firms and therefore foster innovation and growth. Ever since then, my interest in entrepreneurial finance was largely aroused.

With the fascination to understand more in the entrepreneurial finance area, I gained a lot more exposure to this area through taking courses (partially covered in the corporate finance course) and attending seminars after I started my Ph.D. studies at Boston College. After completing course work, I chose corporate innovation as one of my primary research areas and have actively engaged in related research projects. I have recently finished a paper joint with my advisor, Thomas Chemmanur. In that paper, we are trying to understand the impact of human capital or "quality" of the top management team of a firm on its innovation activities and through what channels this occurs. The first challenge we overcome is to measure top management human capital. Our view is that human capital of top management team is multidimensional, consisting of many different aspects that we capture using different individual proxies, such as team size, fraction of managers with MBAs, managers' education and employment-based connections, etc. Thus we conduct common factor analysis on seven different individual proxies to extract a single management quality factor to measure the top management human capital and relate it to the input and output of corporate innovation as well innovative efficiency. The second challenge is the endogeneity concern due to the potential endogenous matching between management quality and firm quality. Making use of the Vietnam War deferment rules, we construct an instrumental variable to generate an exogenous variation in management quality and therefore establish the causality of management quality on corporate innovation. Moreover, we propose that one possible mechanism through which higher quality management teams may

foster greater innovation in their firms is the inventor mobility channel. We find evidence that firms with higher quality management teams experience greater net inflows of inventors and greater net inflows of high quality inventors.

While the above project focuses on public firms that are larger and more established, I am also very interested in studying the corporate behavior of small and private firms, especially venture capital (VC)-backed firms. While prior studies have examined how VC investments help portfolio companies achieve success in terms of IPO or a successful merger and acquisition, I am trying to investigate the effect of VC investment on the success of a firm in the product market and through what mechanisms this occurs. Making use of mostly hand-collected data of VC-backed firms, I am hoping to add to the understanding of what roles venture capitalists play in adding value for these start-ups over and above that documented in the existing literature: see, e.g., Hellman and Puri (RFS, 2000).

Although I have gained considerable exposure to the entrepreneurial finance area through taking courses and conducting my own research, my knowledge is still sporadic. I have always been eager to receive advanced and systematic training in the entrepreneurial finance area so that I can enrich my insights and develop a better understanding of how the research evolves over time, what the research frontier is and what are the interesting questions that are unresolved and yet to be explored more in this area. Unfortunately, our Ph.D. program does not offer advanced courses addressing these aspects. Therefore, I was really excited when I learned from my advisor that the NBER boot camp was calling for applicants, since it perfectly suits my objectives and needs. I searched and looked at the previous curriculum of the boot camp and found it covered a large number of interesting topics and important papers. I believe I can further enrich my insights and knowledge as well as develop my skills for future research from the rigorous training instructed by reputable and research active professors.

To summarize, my strong interest in conducting research in entrepreneurial finance, combined with my prior training background and research experience makes me a good candidate to attend the NBER boot camp. I believe I can benefit from the boot camp considerably from both the rich curriculum incorporating cutting-edge research topics and the intellectual interaction with experienced and active research professors as well as other boot camp participants.