Dear Madam/Sir,

I'm S.Lakshmi Naaraayanan, a doctoral candidate in Finance at The Hong Kong University of Science & Technology, Hong Kong. I wish to apply for the NBER Entrepreneurship Research Boot Camp 2018. My research interests are in the areas of corporate, household finance and entrepreneurship. My ongoing research focuses on understanding determinants of entrepreneurship and its implications for local economic growth in the context of emerging markets.

My contact information is here below:

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My recommendation letter writer will be Kasper Meisner Nielsen, Associate Professor of Finance at the Hong Kong University of Science and Technology.

Overall, the boot camp will provide me with an excellent opportunity to exchange ideas and engage in research that will help to understand issues critical to entrepreneurship research.

Thanking You,
S.Lakshmi Naaraayanan

As an applied financial economist, my research looks to understand the determinants of entrepreneurship and its implications for local economic growth in the context of emerging markets. Across my on-going projects, I examine different aspects of entrepreneurship and its impact on local economic growth. Thus, the opportunity to discuss cutting-edge entrepreneurship research and meet scholars with similar research interests, provided by the NBER Entrepreneurship Research Bootcamp, is invaluable for my research.

One important phenomenon documented in the literature is a persistent gender gap in business ownership, and an even larger gap in business performance. This gender differential exhibits substantial spatial variation with some regions having no differential while others with a dramatic gap. The gender differences in business ownership and the impact on growth have motivated me to engage in entrepreneurship research. Gender gap in entrepreneurship is a relatively under researched topic with many possible future research questions. Given that there is growing interest in gender and entrepreneurship from the Kaufmann Foundation, StartUp America, and the White-house Council on Women and Girls, among others, I am excited at the prospect of expanding our understanding of determinants of household's occupation choice, their interactions, and the importance of frictions in their outcomes. Below is a brief account of my works in progress, and future research agenda.

In **Roads and Entrepreneurship**, co-authored with Sumit Agarwal and Abhiroop Mukherjee, we identify infrastructure as a critical factor that explains the propensity for business ownership. Here we propose to look at entrepreneurship defined as new firm registrations. We examine the effect of new rural roads in India on this measure of entrepreneurship. The idea is that self-employment can be a very important way to improve conditions in rural regions, and roads are a key step to facilitate this. We also explore the impact of male and female entrepreneurs on income and employment

growth, as well as poverty reduction. The evidence that entrepreneurship is positively associated with regional economic performance is growing, however there has been little consideration for gender in the existing literature. Women own a disproportionately small share of businesses and those businesses generate an even smaller share of sales and receipts. Yet, little is known about male- and female-owned businesses' relative contribution to the local economy.

In **Gender bias in entrepreneurship**, I examine inheritance patterns over three generations of individuals to assess the impact of changes in women's inheritance rights in India that granted daughters equal coparcenary birth rights in joint family property that were denied to daughters in the past. I show that the amendment significantly increased daughters' likelihood to inherit land, but that even after the amendment, substantial bias persists. So far as bank loans are critical to the entrepreneurial process, there are likely spatial linkages between lending and business ownership for each gender. Using changes in women's access to land which serves as collateral, I examine the frequency and volume of business loans made by banks and financial institutions as a driver of the change in the propensity for male- and female-owned businesses. I test this hypothesis using a model of entrepreneurship that includes measures of local lending as explanatory variables.

Both projects mentioned above are work in progress and will immensely benefit from comments and suggestions from scholars whose expertise is concentrated in entrepreneurship. In addition, different streams of research in entrepreneurship develop rather independently. Thus, a thorough literature review, guided and discussed by top scholars in the field, will provide a systematic framework for me to gain insights on how different streams of literature relate to one another, and how my work contributes to the extant literature.

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Education

Ph.D. Finance, **Hong Kong University of Science and Technology**, 2020 (expected).

Visiting PhD student Finance and Economics, **Columbia Business School**, Spring 2017.

M.Phil. Finance, **Hong Kong University of Science and Technology**, 2016.

B.Tech. Civil Engineering, **National Institute of Technology**, 2010.

Fields of Research Interest

Household Finance, Corporate Governance, Entrepreneurship

Working Papers

1. **Business Group Spillovers : Evidence from the Golden Quadrilateral in India** with Daniel Wolfenzon

   We compare the investment behavior of standalone firms in different geographical areas after a positive shock to the local investment opportunities generated by a large-scale highway development project. We show that the investment behavior of standalone firms is affected by the density of business groups in the local area, with higher density associated with lower standalone investment. We find evidence in support of a financing mechanism driving this effect: Following the shock, banks disproportionally allocate new loans to business group affiliates, denying standalone firms of external finance. Moreover, we show that standalone firms deprived of finance have higher profitability and TFP than business group affiliates. Overall, our study documents the costs of conglomeration wherein business groups inhibit the growth of standalone firms.

2. **Roads and Loans** with Sumit Agarwal and Abhiroop Mukherjee

   Does the flow of financing respond to changes in productive opportunities even for the world's poor? We answer this question by examining the response of private bank financing to a shock to the rural road network in India, which brought road access to hitherto unconnected villagers. The program prioritized road connectivity for villages above explicit population thresholds, thereby allowing us to exploit discontinuities in the probability of treatment to identify our effects. We find large financing responses to rural road connectivity – over 50% more villagers receive loans, and the average amount lent to them is 20-40% higher – for villages right above the threshold compared to those just below. Roads seem to disproportionately benefit lower caste villagers who lack collateralizable assets, but have basic education.

3. **Does legal liability deter individuals from serving as independent directors? Evidence from a corporate governance reform in India** with Kasper Meisner Nielsen

   This study examines whether legal liability for corporate malpractice deters individuals from serving as independent directors. We exploit a quasi-natural experiment in the form of a recent corporate governance reform in India, which introduced legal liability for independent directors. We find that legal liability deters individuals from serving on corporate boards, and find stronger deterrence among firms where the monetary incentive to serve as an independent director is weak and in firms that are subject to greater litigation and regulatory risk. We document changes in board composition, resulting in fewer expert directors post reform. The decline in board expertise results in 1.6% lower firm value for the average firm. Overall, our study documents that legal liability deters individuals with high reputational costs and weak monetary incentives from serving on corporate boards.

4. **Health care costs, Worker Mobility and Firm Leverage: Evidence from State Health Mandates** with Manpreet Singh

   We study how changes in intra-firm bargaining through health insurance induced 'job-lock' affects financing decisions of firms. We use staggered adoption of state health mandates which significantly increased the cost of health insurance borne by firms, along with providing better insurance coverage for their employees. Higher health care costs reduce worker mobility and allow firms to increase financial leverage by lowering operating costs. Consistent with this, we show that following the adoption of high-cost mandates, job turnover among workers reduces significantly, specifically for workers with employer-sponsored health insurance. Further, we find that firms that experience greater benefit from this job-lock significantly increase their debt ratios. Particularly, the increase in leverage is stronger for a) firms with small labor pool, b) financially constrained firms, and c) firms that operate in industries where workers have high job mobility. Our results are robust to geographic regression discontinuity design where we focus on firms located in counties adjacent to state borders. Overall, these results are consistent with greater operational flexibility allowing firms to raise financial leverage via increase in intra-firm bargaining power.

Work in Progress

5. **Roads and Entrepreneurship** with Sumit Agarwal and Abhiroop Mukherjee
6. **Gender bias in entrepreneurship**

Fellowships, Honors, and Awards

AFA Student Travel Grant	Jan 2018
UGC Research Travel Grant	Dec 2017
Outstanding PhD Student Paper Award, Fordham University	May 2017
Overseas Research Award	Feb 2017- July 2017
HKUST Postgraduate Studentship	Sept 2014-present

Courses Completed

Field exam courses: Empirical Corporate Finance, Empirical Asset Pricing, Theoretical Corporate Finance, Theoretical Asset Pricing

Other courses: Microeconomic Theory I & II, Macroeconomic Theory I, Econometrics, Investment analysis, Derivative analysis, Fixed Income analysis, Accounting Foundations, Empirical research in corporate governance and audit

Academic Presentations

2018: AFA 2018 Poster Session, Midwest Finance Association*, ABFER 2018 (scheduled), CICF 2018 (scheduled), AsianFA 2018 (scheduled)

2017: NYC PhD Colloquium, FMA Asia-Pacific*, USC Marshall PhD Finance Conference 2017, AsianFA 2017, GeorgiaTech*, University of Houston*, HKUST Corporate Finance Symposium, 2017 SFS Cavalcade Asia-Pacific (x2), 8^{th} Emerging Markets Conference

2016: HKUST, AsianFA 2016, Financial Research Workshop, 7^{th} Emerging Markets Conference, India Finance Conference.

(indicates presented by coauthor)*

Clear Water Bay, Hong Kong
March 30, 2018

Kasper Meisner Nielsen
Associate Professor
Department of Finance

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Dear Selection Committee, NBER Entrepreneurship Research Boot Camp;

It is a great pleasure to write this reference letter for S. Lakshmi Naaraayanan to back his application for the NBER Entrepreneurship Research Boot Camp.

Lakshmi is a 4th year PhD student in finance at HKUST, working under my supervision in the area of entrepreneurship and entrepreneurial finance. Lakshmi has several excellent research projects under way, and has just completed a visit to Columbia Business School where he worked with Professor Daniel Wolfenzon.

During his first three and a half years at HKUST, Lakshmi has completed all required course work and excelled in research. Lakshmi is currently working on his job market paper on female entrepreneurs in India. This work would benefit greatly from attending the boot camp and be taught by experienced and active researchers in the area of entrepreneurship and entrepreneurial finance.

If NBER is willing to contribute to the further development of gifted students in Asia, the committee should seriously consider accepting Lakshmi´s application. Lakshmi is by far the most promising academic talent that I have had the privilege to work with. He will be on the job market in 2019, aiming for a placement in North America, and I expect him to do really well.

Overall, I think the skills Lakshmi has displayed as a PhD student bode very well for his future as researcher and scholar. Please consider him for NBER Entrepreneurship Research Boot Camp as his continued development would benefit from attending the camp.

Best regards,

Kasper Meisner Nielsen
Academic Director, HKUST-NYU Master of Global Finance
Associate Professor, Department of Finance
Hong Kong University of Science and Technology