# Cover Letter

Dear committee member:

Please accept my application to NBER Entrepreneurship Research Boot Camp 2018. The economics of entrepreneurship and entrepreneurial finance have always been part my interest of interest and all my current and potential research projects heavily interact with these areas. I am also a frequent consumer of research papers of instructors of the program. I believe my research agenda and academic background makes me a good fit of the Boot Camp.

My CV and essay are in following pages.


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Recommender Information:

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J. Frank Li

3/30/2018

# J. Frank Li

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## Education

Ph.D. Business Economics, University of Michigan, Ross School of Business 2014 - present.

M.A. Economics, Duke University 2014.

B.S. Mathematics (with Honors) and Economics, University of Michigan 2012.

## Research Experience

Research Assistance

Prof. John de Figueiredo, Duke University 2013 - 2014.
Prof. Kyle Handley, University of Michigan 2014 - present.

U.S. Bureau of the Census 2016 - present.

## Research Papers

Measuring the Effects of Firm Uncertainty on Economic Activity: New Evidence from One Million Documents, *in progress* (with Kyle Handley)

Heterogeneous Effects of Cross Border Mergers and Acquisitions: Evidence from U.S. Micro Data, *in progress* (with Ting Lan)

## Presentations

University of Michigan Business Economics Research Symposium 2016($\times$2), 2017

University of Michigan International Economics Workshop 2017($\times$2)

University of Michigan Business Economics Brown Bag Seminar 2018

3rd Conference on “Uncertainty and Economic Activity: Measurement, Facts and Fiction" 2018

## Services

University of Michigan, Ross PhD Forum, Grants Chair 2016 - 2017

University of Michigan, Economics in Motion Annual Meeting, Invited Speaker 2017

University of Michigan, Ross PhD Forum, Social co-Chair 2017-2018

# Teaching

Duke University

Teaching Assistant: STA711 Probability and Measure Theory (Ph.D level) 2013

Teaching Assistant: MATH641 Probability (Ph.D level) 2014

University of Michigan, Ross School of Business

Instructor: BE300 Applied Microeconomics (BBA core) 2017

# Computer Skills

STATA, R, SAS, MATLAB, Python

# PhD Courses

Duke University

Microeconomics sequence, Econometrics I, Macroeconomics I, Real Analysis, Probability, Topics in Economic Theory (Beyond Money and Market; Market Design), Special Topics in Economics (STATA; MATLAB)

University of Michigan

Mathematical Economics, Microeconomics sequence, Econometrics sequence, Applied Econometrics, Econometric Theory, International Trade, International Finance, Industrial Organizations, Fundamental of Inv Decisions with Symmetric Info (Ph.D finance introductory course), Empirical Corporate Finance, Asymmetric Information (Theoretical corporate finance), Structural Estimation in Corporate Finance, IB-BE Topics (Experimental Economics; Economics of Health Insurance; International Topics in Uncertainty, Investment and Trade; Imperfect Competition and Market Outcomes; Enterprise and Health in Emerging Economies; Economics of Institutions and Organization), Applied Industrial Organization, Text Analytics (ICPSR course).

# Entrepreneurship in an Uncertain Globalized World

J. Frank Li[1] (University of Michigan, Ross School of Business)

3/30/2018

There is a common perception that small businesses and young firms not only constitute most of total employment, job creation and destruction, but also significant share of capital investment, innovation input and output. Such perception has drawn attention from both academic researchers and policy makers. Policy changes, technological advancement, and (international) economic environment has shaped the structure and format of entrepreneurial growth as well as created opportunities and challenges. My research interests fall in two of the main challenges entrepreneurs, business owners or even workers in such companies face: uncertainty shocks and competition from cross-border corporations, especially through mergers and acquisitions.

1) Effects of uncertainty on firm activity

Effects of uncertainty shocks on firms' investment and hiring decisions has been widely studied both theoretically and empirically. Theoretical literature goes back to Oi (1961), Hartman (1972) and Abel (1983) to more recent Dixit and Pindyck (1994), Abel and Eberly (1996). Empirical literature picked up soon after the precautionary effects of uncertainty under (partially) irreversibility is theoretically understood. Leahy and Whited (1996), Bloom (2009), Bloom Bond and Van Reneen (2007) are the pioneers.

Traditional empirical literature uses sales growth dispersion, implied volatility, stock price volatility or analysts' prediction dispersion as measures of uncertainty. In my current working paper, with Prof. Kyle Handley, we propose a new time-varying firm-specific uncertainty measure of firms using text analysis by exploiting corporate reports to U.S. SEC. Matching our measure with firm level data, we find that our "subjective" uncertainty not only reduces firms' investment and employment, but also has precautionary effect when firm enjoys high demand. Moreover, we merge our measure into U.S. Census Bureau to acquire detailed data at establishment level. Taking advantage of the data, we are able to estimate the effects of uncertainty on different margins of firm decisions and outputs. [RESULTS UNDER DISCLOSURE REVIEW]

Furthermore, as lots of research has shown the different nature of small vs large, old vs young, private vs public firms (Davis, Haltiwanger, and Schuh (1996), Davis, Haltiwanger, Jarmin, Miranda (2006), Haltiwanger, Jarmin and Miranda (2013), Adelino, Ma and Robinson (2017)), we

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push our data more to investigate the heterogeneous impact of uncertainty on firms of different size, age, etc. We find that small and/or young firms are more responsive to uncertainty shocks. The reason behind such observation could be because large firms possess more means to hedge uncertainty shocks sourcing from multiple market access or cash holding etc. Our results are in line previous research such as Ghosal and Loungani (2000). Alfaro, Bloom and Lin (2017) also showed uncertainty hits financially constrained firms more, and those firms are more likely to be small, young, or start-ups.

Thus, even though our sample is restricted within publicly traded firms, our results shed light on potential research on the impact of uncertainty on privately hold firms given the richness of Census data. As we are not differentiating amongst sources of uncertainty shocks, entrepreneurs could face uncertainty challenges from both political and/or economic conditions, from both domestic market and/or foreign markets. Handley (2014), Handly and Limao (2015 2017) proposes the channel of policy uncertainty as source of firm investment annihilator. Another research interest of mine highlights entrepreneurial challenges from abroad.

2) Effects of cross-border mergers and acquisitions

As the world becomes more and more integrated, the volume of good and capital flow has grown dramatically. In recent years, flows from the South to the North has become significant and triggered policy debates especially over the survival of small business and entrepreneurs. Autor, Dorn and Hanson (2013) argues the effects of China's import penetration on U.S. labor market. Our research would focus more on the firm level, through cross-border mergers and acquisitions. Evidence has shown that M&A activities matter at firm level decisions (Davis, Haltiwanger, Handley, Jarmin, Lerner and Miranda (2014)) and furthermore the origin country of the acquiring firm also matters (Chen (2011)).

Taking the entire sample of cross-border mergers and acquisitions from 1981-2016 whose targets are U.S. companies, we study how certain characteristics of ownership, such as origin, size, industries, shape firm growth, industry structure, and innovation and R&D, etc. A thorough understanding of such effects will not only gain our knowledge on the growth and innovation of firms and incentives of entrepreneurs, which are often considered as engine of economic growth, but will help make policy implications as well.

To conclude, companies and entrepreneurs are working in a world where uncertainty and globalization play an increasingly important role. My research will help understand these challenges and shed lights on policy implications.

**References:**


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Autor, David H., Dorn, David and Gordon Hansen, 2013 “The China Syndrome: Local Labor Market Effects of Import Competition in the United States,” American Economic Review, vol. 103(6), pages 2121-68

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Chen, Wenjie, 2011, "The effect of investor origin on firm performance: Domestic and foreign direct investment in the United States," Journal of International Economics, Elsevier, vol. 83(2), pages 219-228, March

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March 30, 2018

**RE: Jiaze Frank Li, Letter of Reference**

Dear Committee Members:

I very strongly support the application of Jiaze "Frank" Li for the NBER Entrepreneurship Research Boot Camp. I have a long working relationship with Frank as an RA. He has as strong work ethic, great technical and data skills, and promising research agenda. I will briefly describe each of these attributes in turn. I am sure there are number of outstanding candidates for this program, but I hope you'll agree Frank should be on your short list.

Frank and I have been working almost 2 years now on a paper measuring firm level uncertainty from filings with the SEC. This is a very important topic because uncertainty is inherently difficult to measure at the aggregate level, let alone at the level of individual firms. Our methodology is to measure uncertainty based on the frequency of "uncertainty" and related stem words ("uncertain", "uncertainties", etc.) relative to the total number of meaningful words in annual and quarterly reports filed with the SEC. In short, we measure uncertainty by taking the management's word for it. We then create an index from these frequencies that we call the Company Reported Uncertainty Index (CRUX) and estimate its effects on investment and employment at the firm and aggregate level.

Our approach is unique because it gives us firm-level variation in uncertainty that permits a large set of controls to be used when we take the measure to data on firm performance outcomes. We find our measure is nearly as important as standard aggregate proxies for uncertainty used in the literature on investment and employment changes. We have written up a nice preliminary draft of our results that was accepted into the biannual conference "Uncertainty and Economic Activity" that is being held this May in Beijing.

Frank has done at least 50% of the work on this paper and made many independent contributions. Frank has been quick study as an RA and rapidly learned how to handle the large firm-level datasets inside the Michigan Census Research Data Center. He works independently and troubleshoots issues without frequent intervention on my part. He learned how to use machine learning and text algorithms to extract the relevant data from the on-line SEC filings. He has been able to replicate this work in multiple computing environments. At present, he knows more than anyone in the Ross School Business Econ department about natural language processing. He does solid work that I trust. That is why he is a coauthor on this paper and I hope we will continue to work on some follow-up papers we have discussed as well.

I believe Frank also has promising independent dissertation plan. He is in the process of matching cross-border merger and acquisition data from Thomson SDC Platinum database to the confidential Census microdata of the Longitudinal Business Databse and linked foreign trade transactions data. He will then use this information to look at how changes in ownership, i.e. firms that switch from foreign to domestic owners and vice versa, affects firm performance. This is a promising idea especially at a time when more U.S. inward foreign investment coming from developing and newly industrialized countries. This will bring a different set of management practices and synergies that likely changes over the time period Frank will observe in his data.

I give him my strongest recommendation for the Entrepreneurship Boot Camp. Please be in touch if you require any other information.

Sincerely,



Kyle Handley
Asst. Professor of Business Economics and Public Policy