Carnegie Mellon University

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Carnegie Mellon University
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Pittsburgh, Pennsylvania 15213-3890

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To Whom It May Concern:

I am pleased to write a letter of recommendation for my Ph.D. student, Britta Glennon, to attend the NBER Entrepreneurship Boot Camp this summer. Over the years, I've nominated a number of other students who have attended, and benefitted from, this event. Britta is far and away the most talented of any student I have yet nominated. And she would bring to the boot camp a compelling package of interests, experiences, and skills.

Britta is interested in entrepreneurship in greater China, with a special focus on entrepreneurship in the IT and internet-mediated services industries, broadly defined. This is undeniably a "hot" area – especially in the wake of Alibaba's blockbuster IPO – and the business magazines are splattered with hype about it. So, I do not need to do much to motivate the importance of Britta's domain of interest. At the same time, I probably do not need to do too much to point out the serious imbalance between the potential social importance of entrepreneurship in China and the limited amount of careful, scientific, empirical research on it. Britta is the kind of student who could teach the academic research community what is really going on, and the skills she would acquire at the boot camp would be an invaluable asset to her as she pursues this important goal.

Britta came to Carnegie Mellon by way of Cornell and the University of Chicago – she excelled at both of these elite institutions, and acquired a strong background in economics and statistical methods. Britta also spent years investing in Chinese language skills (including a full academic year of intensive study in Taiwan), and she has developed an impressive degree of fluency in written and spoken Chinese. She has no problem interacting with Chinese academics, executives, or officials in their native language, and she can access the growing volume of useful Chinese language primary data sources.

Britta has built wisely and well on these strong foundations, taking focused courses at Carnegie Mellon that have schooled her in the economics of technological change, the modern theory of economic growth, international trade and development, labor markets and organizations, and information systems. All of these provide useful tools and frameworks for Britta's future research agenda. Britta's excellent grades demonstrate the degree to which she has mastered and internalized them.

China's IT and internet entrepreneurs are growing up in an environment that operates under different legal and cultural rules and radically different factor prices than those of the U.S. This environment is also deeply influenced by the investment decisions of foreign firms (including foreign VC firms), significantly shaped by the evolution of global supply chains, and driven, to a large extent, by technological innovations that first appeared in the West. Papers that simply apply techniques and approaches developed for the study of American startups to Chinese data without modification are likely to miss much that has been important in the evolution of Chinese firms and industries. Britta's unusual academic background has given her a rich and varied intellectual toolkit that will prove especially useful in studying entrepreneurship in a "greater China" context.

Britta's first research paper examines the impact of a major shift in the evolution of Taiwan's IT and electronics industries – a shift in which mainland China plays an important role. In the late 1980s and 1990s, Taiwan's IT and electronics industries were transformed by a wave of entrepreneurship, much of it driven by the return of

Taiwanese expatriates with American degrees and many years of work experience in Silicon Valley. Taiwanese firms quickly emerged as important suppliers of IT components and hardware. As Taiwanese wages and factor costs rose, there was a clear incentive to shift some production to mainland China, but Cold War era prohibitions on Taiwanese investment in the mainland in "strategic industries" constrained and limited this shift. The unexpected electoral victory of an opposition party candidate in Taiwan's 2000 presidential election opened the way to a far-reaching liberalization of Taiwan's outward FDI policies and an extraordinarily rapid shift of Taiwanese firms' manufacturing operations across the Taiwan Strait. Almost immediately, concerns rose in Taiwan about the impact of this shift on the innovative capabilities of Taiwanese firms. Could these firms, whose distinctive engineering competencies were often closely related to manufacturing, continue to innovate successfully when more and more manufacturing shifted offshore? This is a question that has been raised in many contexts, including the United States. Empirical resolution of the question in a U.S. context is complicated by the fact that offshoring of manufacturing has evolved slowly, over decades, in a context where the underlying technology has also changed substantially. Taiwan presents the researcher with a very rapid shift in offshoring that was driven by a plausibly exogenous political event.

Britta is a key partner in an international research team that is linking data on the R&D spending and patenting of Taiwanese parent firms to the product-level export data of their mainland Chinese affiliates. Britta spent most of the summer of 2014 in Taiwan, leading the efforts to put these data sets together. These unusually granular data allow Britta to determine when a particular Taiwanese firm has offshored manufacturing of a particular component or product to China. Drawing upon machine learning techniques, a linkage can be established between component/product categories and patent classes, so that Britta can measure the impact of offshoring manufacturing of a particular product/component on the parent firm's patenting in the patent classes associated with that product. Britta is now using this linkage to run her key innovation regressions. Stay tuned.

This first paper speaks to the importance of outside investment and trade in driving the emergence of IT manufacturing in China. As the supply chain becomes more firmly rooted in China, it creates global opportunities for indigenous suppliers, and there is thus a direct connection between Britta's first paper, which she is writing under my supervision, and the work on mostly indigenous Chinese IT and internet services firms that will come next. Based on her performance in the first paper, I am already looking forward to the next stage.

Again, my bottom line is that the Entrepreneurship Boot Camp would be great for Britta, and she would be a great addition to this year's boot camp cohort. If you have any questions about Britta's qualifications, I would be happy to discuss them. Please don't hesitate to contact me at branstet@cmu.edu or at 917-519-1221 (personal cell phone).

Best regards,



Lee Branstetter

APPLICATION FOR NBER ENTREPRENEURSHIP RESEARCH BOOT CAMP 2015

BRITTA GLENNON

REFERENCE: PROFESSOR LEE BRANSTETTER

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NBER Entrepreneurship Research Boot Camp 2015 Application Essay

I want to attend the NBER Entrepreneurship Research Boot Camp in order to gain exposure to the community of scholars studying the economics of entrepreneurship and to become more familiar with the literature in this area. I would learn about contemporary techniques and questions both from leading scholars in the field and from other participants.

I believe I am an especially good fit for this program given my research interests in the economics of entrepreneurship, innovation, and growth in China. I am particularly well-positioned to study high-tech entrepreneurship in China; I have lived in both China and Taiwan, I speak Mandarin Chinese, I have a strong background in the economics of entrepreneurship and innovation (enabled by the courses offered in the Strategy Entrepreneurship and Technological Change program at Carnegie Mellon), and as a student at Carnegie Mellon University, I am closely connected to one of the U.S. centers of advanced technology and entrepreneurship.

One of the noticeable trends in China in the last few years is the accelerated emergence of internet- and mobile-mediated entrepreneurship. China's entrepreneurial environment in this space looks very different from the American one in a number of ways: (1) American technology companies' market positions in China are sometimes deliberately limited or undermined by Chinese government policy, leaving room for homegrown Chinese companies to copy new American technology or business models and adapt them to the Chinese market, (2) the central role of the smartphone – many families, as they became affluent, skipped over personal computers and TVs and went straight to mobile devices, (3) the sheer size of the market (there are over 500 million smartphones in China), (4) the role of *guanxi* (informal connections), (5) large cultural differences, and (6) weak intellectual property rights. This entrepreneurial activity is strongly encouraged by the government under President Xi Jinping through subsidies of high-tech clusters like Zhongguancun in Beijing and through encouragement of incubators like Chinaccelerator that have sprung up to support entrepreneurs. The argument behind these policies is that small new firms are more innovative than large firms and hence should be encouraged to stimulate growth, moderate China's economic slowdown, and increase the role of innovation in China's economic expansion.

My interest in this unique business and policy environment drives my research agenda, which includes topics such as: how Chinese entrepreneurs and local firms interact with multinational firms, what the innovative environment in China looks like, whether China's entrepreneurs have been a key driver of growth, how they are different from American entrepreneurs, what barriers they face, and what policies have been effective in encouraging Chinese entrepreneurship and innovation. These questions are not just relevant for China itself; no matter how it develops, Chinese entrepreneurship in this area is likely to have a global impact. The Chinese market is sufficiently large, the domestic pool of technical talent is sufficiently great, and the level of engagement in that market by established Western players (and established American venture capital firms) is sufficiently high as to ensure that outcome. At the same time, the very different conditions under which Chinese entrepreneurs operate provides an interesting and useful test of concepts and frameworks developed through study of technology-intensive entrepreneurship concentrated in the United States.

My current project is also directly related to the themes of entrepreneurship, globalization, and innovation. I am working with Professor Lee Branstetter on a project studying the relationship between

offshoring and innovation. The consequences of relocating manufacturing functions abroad for firms' ability to innovate are not well understood in the literature. On the one hand, some of the literature contends that offshoring has a positive effect on home country innovation through efficiency gains and reverse technology transfer. However, other strands of the economics and of the organizational and management literature argue that separating the manufacturing and R&D functions of a firm can be dangerous to a firm's innovative capacity, and hence also to the firms' home country. We hope to provide some empirical evidence clarifying this debate through this project. In particular, we are studying the impact of Taiwanese high-tech companies' decision to offshore manufacturing to mainland China on their patenting and R&D behavior. We are exploiting a policy shock in Taiwan in 2001 that lifted many of the restrictions that had prohibited Taiwanese companies from legally offshoring their manufacturing to China prior to that date as a "natural" experiment to get at the causal relationship between offshoring and innovation. The response of Taiwan's famously entrepreneurial electronics and IT firms to this policy shock was rapid and substantial – a large fraction of these firms' manufacturing operations shifted to mainland China within just a few years. How did this affect the direction and level of firm innovation?

Our findings should be of interest to managers of multinationals and to policymakers in countries like the United States and Taiwan where the majority of their firms partake in some offshoring. This project should also be of interest to students of entrepreneurship and industry evolution. Taiwan's IT and electronics industries grew out of one of the rare examples of globally successful high-tech entrepreneurship clusters outside of the United States. My study examines the impact of a major inflection point in the development of these industries; what happens to the innovation of this group of young, technology-intensive firms when much of their manufacturing moves offshore? This project also relates to the research interests described above; the shift of Taiwanese manufacturing to China has created some of the technological and economic pre-conditions necessary for the rise of high-tech entrepreneurship on the mainland, a connection that I am also interested in studying.

In short, there are many interesting areas in the economics of entrepreneurship field that I am interested in exploring in future research. I am particularly interested in the links between entrepreneurship, innovation, globalization, and their relationship to economic growth, especially in China. I would like to study the environment for new businesses in China as compared to other large developing countries like India and developed countries like the United States, the interaction between these new local businesses and multinational firms, and the policies that have led to (and inhibited) China's currently active entrepreneurial community. I would also like to explore further the types of entrepreneurs that exist in China relative to the United States. The NBER Entrepreneurship Research Boot Camp will provide me with the theoretical framework to explore these areas of research and a platform through which to discuss this research with the top scholars in the field.

BRITTA GLENNON

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EDUCATION

Ph.D. in Public Policy and Management 2013-present
Carnegie Mellon University Pittsburgh, PA
Research Interests: Economics of technology policy and technological change in East Asia

Master of Public Policy 2013
University of Chicago, Harris School of Public Policy Chicago, IL
Received Policy Wonk Award for Best Policy Memo

Bachelor of Arts, Economics and East Asian Studies 2008
Cornell University, School of Arts and Sciences Ithaca, NY
Dean's List: Fall 2005 and Spring 2006, GPA: 3.5/4.0

IES Study Abroad Program Spring 2007
Beijing Foreign Studies University Beijing, China

International Chinese Language Program 2010-2011
National Taiwan University Taipei, Taiwan
Awarded the Taiwan Ministy of Education Huayu Scholarship
Received Most Improved Award

PHD COURSES

At University of Chicago: Price Theory I ● Mathematical Statistics I & II
At Carnegie Mellon University: Statistical Theory ● Microeconomics ● Perspectives on Industrial R&D ● Econometric Theory and Methods I & II ● Incentives and Organizations in Labor Markets ● Growth, Technological Progress, and Development ● Economics of Technological Change ● International Microeconomics ● Seminar in Information Systems ● PhD Seminar I, II, & III

SKILLS

Advanced written and spoken Mandarin Chinese: Scored at the "Superior" level (B2 on the European Common Framework) on Taiwan's Test of Chinese as a Foreign Language proficiency exam, May 2011.
Computer: STATA ● SPSS ● R ● Microsoft Office ● Dedoose

INVITED PRESENTATIONS

National Central University (國立中央大學), Zhongli, Taiwan. June 2013
"Offshoring and Innovation"

WORK EXPERIENCE

Carnegie Mellon University Pittsburgh, PA
Teaching Assistant for "The Rise of the Asian Economies" Aug-Dec 2014

Research Assistant for Professor Lee Branstetter Aug 2013-present

American Institutes for Research Chicago, IL
Research Associate Apr-Aug 2013

- Evaluated the Denver Teacher Residency program using interviews of principals, site coordinators, lead teachers, and residents. Interviews were coded using the qualitative software Dedoose.
- Analyzed one of five strategies proposed as part of the Promoting Student Success in Algebra I project which aims to improve student success in Algebra I and ultimately high school graduation. Analysis of the strategy involved writing a research brief followed by documentation of practitioner perspectives on the research findings.
- Produced resources for staff on creating OMB packages for Regional Education Lab (REL) projects.
- Evaluated the Implementation and Outcomes of the Hobbs Municipal Schools Common Core State Standards Initiative. Evaluation involved developing a district reform and student performance history, examining trends in student and school performance using district and state data, and conducting interviews.

Freelance research assistant Apr-Dec 2012

- Calculated STEM and non-STEM occupation unemployment data over time to determine whether STEM workers weathered the recession better than non-STEM workers.
- Carried out quality control of remediation data by state for the purpose of generating state-level indicators for the Change the Equation project.

Taipei Economic and Cultural Office in Chicago, Cultural Division Chicago, IL
Assistant Jan-Aug 2013

- Assisted the Director of the Cultural Division with Chinese-to-English translation work in establishing Taiwan-U.S. education exchange programs.

Berkman Center for Internet and Society at Harvard University Cambridge, MA
Intern for Professor Yochai Benkler June-Sept 2012

- Supported Professor Benkler in his paper concerning the question of whether spectrum should be exclusively-licensed and allocated by auction or open and shared.
- Collected market data on WiFi, mobile payments, wireless healthcare, smart grid communications, security, and secondary markets.
- Wrote detailed case studies on (1) medical wireless services and the use of the MWTS allocation, (2) Intelligent Transport Systems and the use of the 5.9 GHz band, (3) UPCS, and (4) Wireless Internet Service Providers and the use of the 3.65 GHz band.

University of Chicago Chicago, IL
Research Assistant for Professor Kerwin Charles June-Sept 2012

- Supported Professor Charles in beginning analysis of quit behavior in the workforce.

Research Assistant for Professor David Meltzer Mar-Dec 2012

- Supported Professor Meltzer in writing a grant proposal on the possibility of patients using online assistive technologies at home in order to reduce hospitalization time.
- Researched validated instruments for Internet and computer access and literacy in order to write new questions for the University of Chicago hospital patient survey.
- Collected data on Internet and computer access and literacy for comparisons to and validation of future survey responses.

National Opinion Research Center (NORC), University of Chicago Chicago, IL
Graduate Research Assistant for Professor Dan Black Oct 2011-May 2012

- Developed materials for training of field interviewers for the rollout of the new National Survey of Early Care and Education (NSECE), the biggest national survey of its kind.
- Performed quality control of NSECE survey data.
- Conducted data analysis of National Longitudinal Survey of Youth (NLSY) data using STATA.

Plum Consulting London, UK
Analyst Nov 2008-Aug 2010

Conducted economic analysis, interviews, and research for a number of projects, some of which include:

- Developed the likely scenarios for the state of assisted living technologies in 2030 in the UK.
- Appraised the extent to which existing universal service obligations in the UK on telecommunications relay services meet the needs of the deaf and how to serve more effectively.
- Developed an explanatory note for the UK broadcast adjudicator on the cost of capital and its application to broadcast network access.
- Identified appropriate policy priorities for governments when developing demand-side measures for stimulating broadband take-up, for Vodafone.
- Assessed current and future prospects for mobile-fixed substitution in the broadband access market, for European operator.
- Developed embedded mobility and demand for spectrum scenarios for GSMA.
- Evaluated models for privatizing spectrum band management for ACMA, in Australia.
- Evaluated potential for mobile system interference on a cable network, for European operator.

Britta Glennon
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U.S. Bureau of Labor Statistics Washington, D.C.
Analyst, Division of Foreign Labor Statistics Summers 2007-2008

- Researched and analyzed data on work tenure in Japan, using knowledge of Chinese characters.
- Determined hourly compensation methodologies for Italy, Brazil, Finland, and India.

Program Analyst, Division of Management Systems Summers 2006-2008

- Wrote and edited articles for Bureau-wide distribution, prepared legal contracts and data sharing agreements between the Bureau and other government agencies.
- Created online training program using ToolBook Instructor.

PAPERS

Lewin, David, Britta Glennon, and Blanca Hoemburg. "Voice telephony services for deaf people." *Ofcom*. July 2009. < http://stakeholders.ofcom.org.uk/market-data-research/telecoms-research/voice_telep/ >.

Lewin, David, Stephen Adshead, Britta Glennon, Brian Williamson, Tim Moore, Leela Damodaran, Paul Hansell. "Assisted Living technologies for older and disabled people." *Ofcom*. March 2010. < http://stakeholders.ofcom.org.uk/market-data-research/technology-research/research/sector-studies/assisted/ >.

Williamson, Brian, Britta Glennon, Phillipa Marks. "The cost of capital in relation to broadcast transmission." *Office of the Adjudicator – Broadcast Transmission Services*. July 2010. < http://www.adjudicator-bts.org.uk/documents/plum.pdf >.

Multiple articles for the Chicago Policy Review:

"Pirating for Innovation." May 2012. < http://chicagopolicyreview.org/2012/05/16/pirating-for-innovation/ >.
"The Speed of Progress." June 2012. < http://chicagopolicyreview.org/2012/06/28/the-speed-of-progress/ >.
"The Great Firewall: A Closer Look at Digital Censorship in China." October 2012. < http://chicagopolicyreview.org/2012/10/03/the-great-firewall-a-closer-look-at-digital-censorship-in-china/ >.
"The Politics of Internet Access and Expression in Cuba." October 2012. < http://chicagopolicyreview.org/2012/10/18/the-politics-of-internet-access-and-expression-in-cuba/ >.
"Cell Mates: Mobile Phones and Digital Access in China." January 2013. < http://chicagopolicyreview.org/2013/01/07/cell-phoning-it-in/ >.
"It's in Beta and Always Will Be." January 2013. < http://chicagopolicyreview.org/2013/01/15/its-in-beta-and-always-will-be/ >.
"How Big is the Broadband Bonus?" January 2013. < http://chicagopolicyreview.org/2013/01/31/how-big-is-the-broadband-bonus/ >.
"Tweeting the Revolution." March 2013. < http://chicagopolicyreview.org/2013/03/12/tweeting-the-revolution/ >.
"Barriers for Highly skilled Immigrants: Why should American firms care?" April 2013. < http://chicagopolicyreview.org/2013/04/26/barriers-for-highly-skilled-immigrants-why-should-american-firms-care/ >.
"Setting Priorities: What Research is Worth Funding?" April 2013. < http://chicagopolicyreview.org/2013/04/29/setting-priorities-what-research-is-worth-funding/ >.
"The Role of Technology in Crisis Management and How it Could Be Done Better." May 2013. < http://chicagopolicyreview.org/2013/05/07/the-role-of-technology-in-crisis-management-and-how-it-could-be-done-better/ >.
"Hoping to Create Your Own Silicon Valley? Don't Count on Returning Entrepreneurs." July 2013. < http://chicagopolicyreview.org/2013/07/05/hoping-to-create-your-own-silicon-valley-dont-count-on-returnee-entrepreneurs/ >.

Multiple articles in the ICLP-NTU Chinese Language bulletin:

<http://iclp.ntu.edu.tw/index.php?option=com_content&view=category&layout=blog&id=75&Itemid=85&lang=en >.