
November 30, 2014

Department of Economics
UCLA
P.O. Box 951477
Los Angeles, CA 90025

The recruitment committee
PIE group
NBER
Boston, MA

Dear recruitment committee member,

I am writing with my great interest to apply for the position of the Post-Doctoral Fellowship program in listed in innovation the JOE website. I am currently completing my Ph.D. in Economics at UCLA and the expected graduation date is June 2015. My research interests are in the areas of organizational forms and innovation, innovation and macroeconomics.


My job market paper titled "Learning or Innovation: A quantitative assessment". This paper make both theoretical and empirical contribution to the growth literature and empirical IO literature.

I have also attached my curriculum vitae, research proposal and my references are provided by my committee chair Hugo Hopenhayn, as well as Rosa Matzkin, and Zhipeng Liao, professors at UCLA and external member Lynne Zucker.

Please let me know if I can provide you with any additional information. I will be attending the ASSA conference in Boston and would welcome the opportunity to meet you and learn more about the position and to talk more about myself.

Sincerely yours,



 Cong Xie

CONG XIE

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Education

- 2009- present: University of California at Los Angeles
M.A
Ph.D. Economics expected in 2015
- 2005-2009: Hong Kong University of Science and Technology
B.Sc. Economics and Finance, first class honor
Minor in Mathematics
- 2008: University of California at Berkeley
Exchange student at Economics department

Fellowships, Honors and Awards

- 2012: Palevsky fellowship
- 2010: Howard endowed fellowship in economics
- 2005-2009: University fellowship

Fields

Macroeconomics, Industrial Organization, Applied Econometrics

Research interests

Entrepreneurship, innovation and growth, patents, merger and acquisition

Meanfield game

Meetings and Conference

NBER Summer Institute Entrepreneurship Group 2014

NBER-Kauffman foundation Entrepreneurship Research Boot Camp 2014

Princeton finance initiative 2012

Working Experience

Research Assistant to Professor Lynne Zucker and Michael Darby NBER

Teaching Assistant Teaching Associates and Teaching Fellow UCLA

Papers

Job Market paper:

Learning or Innovation: A quantitative analysis

Abstract

We study an environment where growth is generated by accumulation of knowledge from innovation and learning in continuous time. The learning rate and agent's choice of R&D intensity jointly determine the knowledge distribution in the economy. From the model we can identify the cost of innovation from macro distribution of the knowledge. This distribution is estimated from the US patent data. The inference algorithm consists of two steps. In the first step, the policy function is reconstructed from the macro distribution through the law of motion equation. In the second step the cost function is reconstructed from the inverse problem of the Bellman equation. This algorithm provides an identification and estimation strategy for a class of continuous time macroeconomic models including knowledge diffusion models such as Lucas and Moll (2014), firm dynamic models such as Luttmer (2007) and other continuous time dynamic game models based on the mean field game theory. The inferred cost of innovation shows non-convexity in agent's level of knowledge and the relative contribution of the innovation is more than 99%. We also explain the inverted-U shape relationship between the patent citations and the patent value that has been documented recently.

Working papers:

Market for firms vs Market for ideas

Abstract

One recent trend in high-tech industries is that established incumbents frequently acquire small firms, paying high premiums for their knowledge assets and research capability. I cleaned up the USPTO patent reassignment data and matched it with SDC platinum merger and acquisition data, NBER patent citation data, Compustat firm data, and the Flemming inventor dataset. I found that merger and acquisitions is indeed an important way of transferring knowledge, and it accounts for around 80% of total patent transactions from 1976 to 2012. Second, inventors from the acquired firm were maintained after the merger for several years. Finally, complementing the results of Serrano (2006) that patents are traded directly between small firms, I found that larger firms are more likely to use merger and acquisitions to access the patents than directly trading them. In other words, large firms use the market for firms to gain knowledge while small firms use the market for patents to transfer knowledge. There is also significant difference between the two methods after the transaction.

Mergers, innovation and firm valuations

Abstract

In company to the empirical facts find in the project market for firms vs market for ideas, I used a general equilibrium firm dynamic framework to quantitatively assess and explain the internal versus external R&D choice of the firms and why we frequently observe merger and acquisitions as a way to transfer knowledge. The model could also explain the premium paid by the acquirers and how this encourages entrepreneurship behavior and promotes R&D investment for the entrepreneurs.

The real effects of financial constraints from Korean data: before, during, after (with

Sangyup Choi)

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Abstract

Ongoing work entitled "The effects of the pre-crisis innovation activities on the during and after crisis firm's growth" is a joint paper with Sangyup Choi, a graduate student at the UCLA. This paper constructs a unique data set by merging the Korean firm-level innovation survey data with their financial statement data. Bias-corrected heteroskedasticity-consistent matching approach on the sample of 450 manufacturing firms reveals that firms who had difficulty of innovating between 2006 and 2008 perform worse during the 2008-09 global financial crisis in terms of investment, employment, and sales growth even after controlling for their size, age, access to a stock market, exporter status, credit ratings and so on. We are currently seeking for further identification of financial factors from non-financial factors to quantify the pure effect of the pre-crisis innovation decision on the firm's growth during and after the financial crisis

Personal

Citizenship: CHINA

Birthday: 1987/Jul/31

IT skills

Stata, SAS, SQLServer, Matlab, Python, C++

Language

Mandarin (Native), English (fluent) Cantonese (fluent)

Other

Hong Kong Young Entrepreneurs Development Council Entrepreneur's Challenge
Business plan competition, first prize 2009

References

Hugo Hopenhayn (Chair)

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Rosa Matzkin

Charles E. Davidson Professor of
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Research Proposal

CONG XIE

Nov 2014

Innovation and technology spillover has been important in understanding economic growth across countries and heterogeneity within individual countries. The basic spillover story assumes knowledge is "nonrival" and diffuses through product interaction. In this intuitive framework, several topics were abstracted: (i) how heterogeneous agents interact in the innovation and spillover process; (ii) how organizational forms facilitate or impede the knowledge diffusion and (iii) how property rights affect the spillover process. My research agenda will be focusing on these three areas.

Understanding heterogeneity in spillover from the macro data

Innovation and learning are two important forces that drive economic growth. It is important to distinguish the relative influence of these two forces before introducing any targeted policy interventions to promote economic growth. Their relative contributions hinge on individual choices, which depend on the cost of innovation and the environment in which the learning takes place. Since knowledge flows from the person with more to the person with less, the option value of learning thus depends on one's current knowledge level and the entire distribution of others from whom he might learn from. This dependence will affect the innovation choices of the agents. On the other hand innovation choices will affect the evolution of this distribution. Heterogeneity in knowledge persists in this environment. Estimating this heterogeneity is important for understanding the interaction of this two forces and their relative scales.

When those models are calibrated with the data within a macro framework, this heterogeneity is often parametrized in a low dimensional space to reduce the burden of the calculation. Only local identification can be provided in those environments. On the other hand, recent developments in empirical IO literature have provided standard treatments such as Bajari Benkard and Levin's(2007) (BBL) two-step estimator that allows for nonparametric identification and estimation of heterogeneity. However, when the application of this principle to macroeconomic frameworks requires access to large amount of micro level decision data which is difficult in macroeconomic or microeconomic setting.

My research bridges this gap by extending this two-step algorithm to a class of continuous time macroeconomic models recently introduced by Lucas and Moll (2014). In this class of the

macroeconomic models, there are two essential equations: 1) the Bellman equation in which agents maximize their utilities given their states and macro distribution and 2) the law of motion equation traces the evolution of the macro distributions over time. By studying the inverse problem of these two equations, I recover the individual choice probabilities from the macro distribution of the data and then infer the cost of innovation among heterogeneous agents.

Using this method, I also infer the equilibrium relative importance of innovation and learning to economic growth. The method and results are summarized in my job market paper *Innovation or Learning: A Quantitative Exercise*. I plan to further examine the interaction between knowledge diffusion and financial constraints. Financial constraints will affect the R&D intensity and further affect the growth rate through technology diffusion channels. There are still many open questions in this area.

Organizational forms and knowledge diffusion

One recent trend in high-tech industries is that established incumbents frequently acquire small firms, paying high premiums for their intangible assets and research capability. It is puzzling compared to the traditional view that ideas are diffused by market transactions of patents.

Collecting new transaction data by United States Patent and Trademark Office (USPTO) with special focus on different transaction methods of patent, my project *Market of Firms vs. Market of Ideas* examines i) why knowledge diffusion involves different organizational forms, and ii) what the consequences and antitrust implications for these observed differences are. Using patent citations as proxy for the utilization rate, I found that patents being transferred directly have a higher first generation internal utilization than patents transferred through merger and acquisitions. However, this difference disappeared for second and third generation internal citations. One conjecture is that intangible knowledge is embedded in the employee's mind, which can only be transferred through merger and acquisitions. That knowledge is then diffuses to employees and coworkers at the new company through personal interactions. More evidence is needed to prove this conjecture.

My other working project, *Buying for Innovation*, tries to understand mergers in high-tech industries in terms of i) the size of the premium in mergers and ii) how mergers options affect the incentives for entrepreneurship activities, particularly in reshaping the R&D incentives of small firms and large incumbent firms. Results suggest that an active merger market provides significant incentives for small enterprises to invest in R&D and explains why the R&D spending ratio decreases with firm size.

Financial constraints and innovation

Ongoing work *The effects of pre-crisis innovation activities on the growth of firms during and after the crisis* is a joint paper with Sangyup Choi, a graduate student at the UCLA. This paper constructs a unique data set by merging the Korean firm-level innovation survey data with the financial statement data. Bias-corrected heteroskedasticity-consistent matching approach on the

sample of 450 manufacturing firms reveals that firms which had difficulty in innovating between 2006 and 2008 performed worse during the 2008-09 global financial crisis in terms of investment, employment, and sales growth even after controlling for size, age, access to a stock market, exporter status and credit ratings. We are currently seeking for further identification of financial factors from non-financial factors to quantify the pure effect of the pre-crisis innovation decision on the firm's growth during and after the financial crisis.

Engaging in post-doctoral studies at NBER innovation program will provide an opportunity to access more data and formalize those conjectures as well as to develop more theoretical foundations to those conjectures.