Zi Yang Kang
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October 8, 2019

NBER Health Economics Research Boot Camp Committee
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138

Application for NBER Health Economics Research Boot Camp 2019

Dear Admissions Committee:

I am submitting my application for the NBER Health Economics Research Boot Camp 2019. I am particularly interested in the boot camp because of my interest in health economics, especially in relation to theory and market design.

At present, I am a second-year PhD student at Stanford GSB. I have completed my coursework and am starting to work on theoretical research motivated by healthcare markets. My research interests lie in the intersection of theory, industrial organization and market design, and I believe that there is potential for more work to be done in these areas to further our understanding of health economics.

I have enclosed my CV and a more detailed statement explaining my rationale for attending the boot camp. Ali Yurukoglu (ayurukog@stanford.edu) has kindly agreed to provide a recommendation letter for me.

Thank you for your time and consideration.

Sincerely,
Zi Yang Kang

Enclosed:
CV, list of coursework and personal statement

Zi Yang Kang

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Education

Stanford Graduate School of Business
Ph.D. in Economics, 2018–present

Stanford University
M.S. in Mathematics, 2018
B.S. with Honors in Mathematics, 2015–2017

Research

Working Papers

"Fixed-Price Approximations to Optimal Efficiency in Bilateral Trade" (with Jan Vondrák), 2019. Submitted.

Research in Progress

"Narrow Networks in Vertical Contracting," 2019.

"Bargaining and Accommodation in Multiunit Ascending Auctions," 2019.

"Selection and Seasonality in Search Markets" (with Nadia Kotova), 2019.

Publications

"General Theories of Reflection and Transmission Scratch Holograms" (with Bingjian Li, Jiahuang Lin, Ye Yeo, and Guoxian Tan) in *Canadian Journal of Physics*, **95**(5), pp. 432–419, 2017.

"The Vertical Oscillations of Magnets" (with Kewei Li, Jiahuang Lin, Samuel Yee and Jeremias Wong) in *European Journal of Physics* [Special Issue] **32**(4), pp. S1–S14, 2011.

Honors and Fellowships

Jaedicke Merit Award, Stanford Graduate School of Business, 2018

Phi Beta Kappa, 2018

Firestone Medal for Excellence in Undergraduate Research, Stanford University, 2017

J. E. Wallace Sterling Award for Scholastic Achievement, Stanford University, 2017

President's Award for Academic Excellence in the Freshman Year, Stanford University, 2015

Gold Medal, International Physics Olympiad, 2011

Gold Medal (Champion Team), International Young Physicists' Tournament, 2010

Teaching

Instructor, Economics Bootcamp for Stanford Public Policy Program, 2017, 2018, 2019

TA for Prof. Jeremy Bulow, PUBLPOL 301A: Microeconomics (MPP), 2017

Other employment

Analyst, Auctionomics Inc., 2018

Coach, Singapore National Team for the International Young Physicists' Tournament, 2014

Technician specialist, Republic of Singapore Air Force, 2012–2014

PhD Courses

Current courses

1. Hrp 257 (topics in health economics), taught by Jay Bhattacharya and Kate Bundorf.
2. Ms&e 366 (topics in market design for non-profit settings), taught by Irene Lo.
3. Research assistantship for Mike Whinston.

Core

Microeconomic theory

1. Econ 202 (first-quarter microeconomics at Stanford Econ), taught by Paul Milgrom.
2. Econ 203 (second-quarter microeconomics at Stanford Econ), taught by Jon Levin.
3. Mgtecon 600 (first-quarter microeconomics at Stanford GSB), taught by David Kreps.
4. Mgtecon 601 (second-quarter microeconomics at Stanford GSB), taught by Bob Wilson.
5. Mgtecon 602 (third-quarter microeconomics at Stanford GSB), taught by Andy Skrzypacz.

Econometrics

1. Mgtecon 604 (second-quarter microeconomics at Stanford GSB), taught by Guido Imbens.
2. Mgtecon 605 (third-quarter microeconomics at Stanford GSB), taught by Peter Reiss.

Elective sequences

Industrial organization

1. Econ 257 (first-quarter IO), taught by Brad Larsen and Paolo Somaini.
2. Econ 258 (second-quarter IO), taught by Liran Einav, Matt Gentzkow and Ali Yurukoglu.
3. Econ 260 (third-quarter IO), taught by Liran Einav.

Microeconomic theory

1. Econ 282 (mechanism design), taught by Ilya Segal.
2. Econ 286 (advanced game theory), taught by Gabriel Carroll.
3. Econ 290 (theory research seminar), taught by Bob Wilson.

Market design

1. Econ 283 (auction theory), taught by Paul Milgrom and Mike Ostrovsky.
2. Econ 289 (matching and market design), taught by Fuhito Kojima.

Other courses

Macroeconomics and finance

1. Econ 210 (first-quarter macroeconomics at Stanford Econ), taught by Monika Piazzesi.
2. Mgtecon 626 (continuous-time methods), taught by Yuliy Sannikov.
3. Finance 627 (venture capital), taught by Ilya Strebulaev.

Mathematics and statistics

1. Stats 300A (statistical decision theory), taught by Andrea Montanari.
2. Various other PhD courses in mathematics.

Personal Statement

As a second-year PhD student primarily interested in microeconomic theory, market design and industrial organization, I recognize that my research interests and goals are a little different from the typical PhD student interested in health economics.

My interest in health economics stems from a few lectures in the industrial organization sequence that I took last year. Two lectures in particular stood out for me. The first was a lecture by Liran Einav describing his work with Amy Finkelstein, Stephen Ryan, Paul Schrimpf and Mark Cullen on selection and moral hazard in health insurance markets. The second was a lecture by Ali Yurukoglu on Nash-in-Nash bargaining in vertical contracting between downstream distributors and upstream channels in television markets.

The first lecture by Liran was a bit of an eye-opener. I have always been interested in contract theory and mechanism design, but prior to Liran's lecture, I had never carefully thought about how one might search for empirical evidence of selection and moral hazard. The paper also sparked my curiosity about healthcare in the United States, which I quickly learned to be highly complex and economic in nature.

The second lecture, while less directly related to health economics at the outset, quickly got me interested in the literature on insurer-provider networks. At the time of Ali's lecture, I was (and currently still am) working on a project on bargaining ("Bargaining and Accommodation in Multiunit Ascending Auctions"), and quickly got interested in the Nash-in-Nash solution concept and its microfoundations. Through Ali, I discovered and read Robin Lee's papers – at first, those with Kyna Fong, Allan Collard-Wexler and Gautam Gowrisankaran on Nash-in-Nash bargaining, but later also those with Kate Ho on insurer-provider networks in healthcare markets.

One of my current research projects ("Narrow Networks in Vertical Contracting") is directly inspired by the questions that Ho and Lee (2019) ask: Why do we see narrow networks in healthcare markets? What networks are "optimal," and how can we design markets with optimal networks? Through this project, which is still extremely preliminary, I am hoping to understand better how insurer-provider networks are formed and the welfare consequences that narrow networks have on consumers.

More generally, I believe that there is potential for a lot more theoretical work to be done in healthcare markets. As a future long-term research direction, I intend to study market design in the context of healthcare markets. In my mind, this entails a variety of different issues, ranging from insurance contract design and regulation, to provider incentives and inequality in healthcare.

The rationale for my attending the NBER health economics boot camp, therefore, is to get a comprehensive understanding of both the theoretical and empirical economic issues in the healthcare market. I believe that a good grasp of both theory and empirics is crucial for effective market design, and hope to be given the opportunity to do so from experts in the field at the boot camp. I also hope to be able to contribute with a slightly different perspective to discussions at the boot camp, by taking advantage of my relatively more extensive background and interest in microeconomic theory and market design.

Finally, as part of my plan to achieve my research goals, I am taking two courses this quarter: a health economics topics course taught by Jay Bhattacharya and Kate Bundorf; and a market design topics course taught by Irene Lo, with a specific focus on non-profit settings. I have also just begun a research assistantship with Mike Whinston on a project that studies how healthcare providers respond to dynamic incentives. I hope to be able to advance my study of health economics further at the NBER health economics boot camp.

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ALI YURUKOGLU
Associate Professor of Economics

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10/10/2019

Dear Kate, Ben, and Jon:

This letter is in support of Zi Yang Kang for the NBER health economics bootcamp. Zi Yang is an exceptional student. We were lucky for him to choose the GSB over other programs including MIT. He had already taken the first year micro theory sequence in undergrad. So I had him as a first year student in the second year IO class. There were three students out of fifteen with pretty much perfect performance and he was one of them. Moreover, he developed an interest in doing empirical IO whereas he had entered more inclined to become a theorist. He still has a theoretical bent, but has been pursuing applied projects. Moreover, he has gotten interested in health care. He and I had started batting around some ideas of applying equilibrium concepts like oblivious equilibrium to large state space dynamic bargaining games. When he was reading the bargaining literature, he got really interested in the recent narrow network papers like Ho and Lee (2019), and from there has developed an interest in health care. He has also started RA'ing for Mike Whinston while Mike is visiting, working on health care related projects (I don't know the details but these may be joint projects with Ben and/or Jon). The bootcamp would be perfect for him to get up to speed on the literature and learn more about institutions. I think he is an ideal candidate who you will like a lot as well. He is serious and hard working and a genuinely good person.

Please let me know if I can provide more information. Feel free to give me a call 650-721-1293.

Sincerely,



Ali Yurukoglu
Associate Professor in Economics

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ALI YURUKOGLU
Associate Professor of Economics

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