Jingyuan Wang
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Recommendation Letter Writer: Mar Reguant
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Innovation Research Boot Camp 2022

Dear Members of the Committee:

My name is Jingyuan Wang and I am writing to apply for Innovation Research Boot Camp 2022. I am currently a fourth-year Ph.D. student at the Department of Economics at Northwestern University. My research interests are in industrial organization, and I am particularly interested in firm strategic interactions and innovation dynamics.

The training during my Ph.D. studies has prepared me with many industry organization-related models and skills. My current project is about dynamic innovation policy design, and I am interested in the economics of innovation in general. The classes I've taken have offered me an IO perspective. Thus I want to get exposed to the field of innovation to learn more. The Innovation Research Boot Camp 2022 can be an excellent opportunity for me to get deeper into the economics of the innovation field and interact with the innovation research community.

Please find my CV and application essay attached.

Thank you for your time and consideration.

Sincerely,

Jingyuan Wang

Jingyuan Wang

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Education

Northwestern University
Ph.D., Economics, Expected 2024.
Fields: Industrial Organization

Cornell University
M.S., Applied Economics and Management, 2017.

Peking University
B.S., Environmental Science Economics, 2014.
B.A., Economics, 2014.

Publication

Estimating the Elasticity to Real Time Pricing: Evidence from the Spanish Electricity Market, with Natalia Fabra, Dave Rapson and Mar Reguant, AER Papers & Proceedings, 2021

Research

Subsidizing Industry Growth in a Lemon Market
(in progress)
An analysis of the dynamic impact of short-term consumer subsidies on infant industry growth, using data from the electric vehicle (EV) industry in China. In China, many speculating firms with low product quality entered into the EV industry after a heavy subsidy. I will evaluate the consequences and propose alternative infant industry policies.

The Distributional Impacts of Real-Time Pricing
with Natalia Fabra and Mar Reguant
We study the distributional impacts of real-time pricing (RTP) in the Spanish electricity market, which rolled out RTP as the default tariff for a large share of residential customers. We complement aggregate patterns of distributional effects with a two-step method to infer individual households' income using zip-code income distributions and high-dimensional consumption data. The aggregate impact is regressive: low-income households, who tend to have more electric heating, benefit from the price insurance provided by time-invariant prices during winter, when prices tend to be higher and more volatile. Using counterfactual experiments, we find that RTP makes low-income households particularly vulnerable to adverse weather shocks during winter. In the future, the wider adoption of enabling technologies (including storage and demand response devices) by the high-income groups might worsen the distributional impacts of RTP.

Related Experience

2016-2018
Energy Policy Institute at the University of Chicago (EPIC)
Pre-doctoral Research Specialist *Advisor: Michael Greenstone, Solomon Hsiang*
Project: Social Cost of Carbon

Teaching

Teaching Assistant, Northwestern University
ECON 410-1, Microeconomics (PhD core course), Fall 2020, Fall 2021
ECON 371, Economics of Energy, Spring 2020

Languages and Skills

English (fluent), Mandarin (native)
Stata, R, Python, QGIS

Completed Courses

First-year Microeconomics, Macroeconomics, and Econometrics sequences
ECON 450-1,2,3 Industrial Organization
ECON 412-1,2,3 Economic Theory and Methods
ECON 414-1,2,3 Economics of Information
IEMS 450-2 Mathematical Optimization II

References

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Innovation Research Boot Camp 2022 Application Essay

By Jingyuan Wang

My current research project evaluates the dynamic impact of short-term consumer subsidies on infant industry growth, using data from the electric vehicle (EV) industry in China. The project points out the inefficiency in the current policy and can shed light on innovation policies for all industries.

Policymakers usually provide subsidies to encourage consumer adoption of innovative technologies. The subsidies are often given out at the early deployment stage of new technology to enlarge market size, thus motivating more firms to engage and stimulating industry growth. Therefore, an early-stage short-term subsidy can have a permanent benefit by impacting firm entry and investment decisions.

However, collective reputation and reputation externalities in this kind of industry have received less attention. The adoption of innovative products always involves asymmetric information and collective reputation. Because of the unfamiliarity with the new technology and almost zero experience of using the product, consumers often have limited information of the quality of the product. This nature of asymmetric information among firms and consumers leads to industry collective reputation and reputation spillover issues in infant industries. For example, in the EV industry, Tesla should have a good reputation externality as it produces good EVs and lets more consumers accept the product. However, if there is a low-quality firm, it will negatively affect the entire industry's collective reputation. When a consumer sees a bad electric car from firm A, he would believe this firm is crappy, but other firms, e.g., Tesla, might not be as good as he thought before he saw any electric car. Therefore, the innovation subsidy should not be too large to let these firms with bad quality enter, ruin the industry's reputation, harm good firms' profit, and eventually crowd out good firms in the industry.

This trade-off complicates the design of an optimal innovation subsidy policy. A consumer subsidy that enlarges the market size and allows more low-quality firms to survive would lead to the classic Akerlof 1970 lemon market problem. Policies intended to speed up adoption may have the opposite effect in the long run if they propagate low-quality signals.

I suspect this is happening in China's electric vehicle (EV) market. China heavily subsidized EVs from 2015-2018, and the consumer subsidy was about one-third to half of the vehicle price. The Chinese electric vehicle market has been boosted thanks to the policy. However, according to discussions on the media and several consumer surveys, the reputational issue is also happening in China. Consumers in China tend to dislike EVs as many EVs sold in China are from unbranded firms that entered into the industry only for the subsidy.

My project documents this reputation externality in China's emerging electric vehicle market. I then build a dynamic model to explain firms' entry and exit decision and their responses to the consumer subsidy policy. The project aims to alert policymakers about the potential problems associated with the subsidy policy that encourages innovation adoption. I will design an optimal subsidy policy that mitigates the reputational issue while stimulating industry growth. This policy could also shed light on other industries' innovation policies.

I am also interested in innovation policies in other industries. I've been reading papers and collecting data in the pharmaceutical and renewable energy industries. My future research might focus on the R&D and investment in these industries. In general, I'd like to answer how firms' innovation-decision and strategic interactions respond to government policies and how policies could improve the quantity and quality of the innovations.

I want to attend the innovation research boot camp to learn more about the economics of the innovation field, including the critical issues and the methodology in this field. I am more familiar with the industrial organization field as I've taken several classes and had relevant research experiences. I truly value this opportunity to get exposed to the field of innovation, learn new knowledge, and get feedback from professors and other Ph.D. students with similar interests. I believe the lectures in the camp could help me with not only my current project but also developing future research ideas. And I think my knowledge and experiences in IO could also help others in the camp.

Thank you again for reviewing my application!

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Recommendation NBER Innovation Camp 2022

January 19, 2022

To Whom It May Concern:

I am writing this letter of recommendation for Jingyuan Wang with the strongest terms possible for an NBER Innovation Camp. Jingyuan is a brilliant graduate student at Northwestern, currently in her fourth year. I believe she would be a great candidate for attending the program.

I have known Jingyuan since she started RAing for me as a first and second year, and I am now her main advisor. Jingyuan has been very interested in studying energy and environmental topics since coming to Northwestern. She has worked with a project related to leakage and cap-and-trade regulations. We have published a short P&P on the effects of real-time pricing on electricity demand. She is also now co-authoring a project with me on how to infer the unobservable distribution of income based on electricity smart meter data. Her solo-authored work is focused directly on innovation.

Jingyuan is a very skilled student. She did amazingly well in her first-year classes across the board, e.g., in micro theory and econometrics (and probably also in macro, I just never checked!). She did so well in the theory classes that she has been the TA for the graduate course in theory. She is also good at programming and she also doesn't mind working with more tedious tasks to gather and process data, so I believe she has all the right skills to become a great researcher.

She has also work of her own studying the adoption of electric vehicles in China, with a focus on how consumers might be deterred from purchasing EVs if they buy some lemons from fringe brands early on. In all of these projects, whether as an RA, a co-author, or a single author, Jingyuan has been very entrepreneurial and productive.

In her work-in-progress paper, Jingyuan has developed a theoretical model on how learning about electric vehicles can be hampered by the presence of low-quality firms. This setting applies quite well to the Chinese market, where there is much more proliferation of local brands and models that do not necessarily have the rubber stamp of a Tesla or a Leaf but are much cheaper in

costs. So, consumers face a trade-off when making their decisions. Dynamically, their myopic decisions can also influence how other consumers will perceive the value of EVs going forward.

As any model with learning and dynamics, these are difficult effects to identify. Jingyuan tries to show suggestive evidence that markets with a "bad" shock early on, may get stuck with lower growth of EV adoption. These results, at the end of the day, are suggestive, so the identification of the model is mostly structural, but it shows Jingyuan's attempts to try to motivate the exercise with facts. Overall, this might not turn into her job market paper, but it should be a valuable paper in her portfolio. Given the importance of the Chinese market when it comes to EVs and energy, I am sure this line of research will bring other interesting avenues for future questions.

I believe Jingyuan would particularly benefit from and contribute to the program. First, her research is directly related to innovation questions. I am sure she would be eager to share her work and contribute to the general discussion. Second,I believe a huge benefit to her would be the possibility to interact with the other students and open her views about other work in innovation, as our department is very heavy on the Industrial Organization end. I think getting exposed to other innovation areas and methodologies would be extremely valuable, and something we can offer less well at our department.

Please, do not hesitate to contact me if you have any questions. I remain at your disposal for any additional information you might require.

Sincerely,



Mar Reguant

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