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February 12, 2026

To
NBER Innovation Research Boot Camp Selection Committee,
National Bureau of Economic Research
1050 *Massachusetts Avenue*
Cambridge, MA 02138

Re: Application to the NBER Innovation Research Boot Camp (Summer 2026)

Dear Members of the Selection Committee,

I am writing to apply to the 2026 NBER Innovation Research Boot Camp. I am a PhD candidate in Finance at the University of Southern California Marshall School of Business, working on theory and empirics at the intersection of innovation, organization, and contracting.

My research focuses on how interdependence across tasks and components shapes experimentation, organizational design, and governance. I am particularly eager to participate in the boot camp because of its emphasis on connecting frontier research in innovation to concrete empirical settings and institutional design questions, and because of the opportunity to engage with the NBER innovation community through the Summer Institute sessions.

My application materials include my CV and a one-page research statement. My references are Prof. Jason Donaldson and Prof. Giorgia Piacentino.

Thank you for your consideration. I would be grateful for the opportunity to attend and contribute to the 2026 boot camp.

Your Sincerly,

Zichen Zhao

Zichen Zhao

CONTACT INFORMATION

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EDUCATION

University of Southern California

Ph.D. in Finance, 2023 -

Ph.D. Courses: First-Year Macro, Micro and Metrics; Second-year Macro, Corporate Finance and Asset Pricing.

University of Chicago

MA in Economics, 2021
Visiting Student, 2016

Ph.D. Courses: Price Theory; Empirical Analysis; Topics in Microeconomic Theory; Topics in Labor Economics; Repeated Games; Corporate Finance.

Nankai University

Bachelor of Economics, 2018

RESEARCH EXPERIENCE

Booth School of Business, University of Chicago

Research Professional at the Fama-Miller Center 2021 - 2023

PIs: Professors Emanuele Colonnelli, Elisabeth Kempf, Stefan Nagel, Anthony Lee Zhang and Eric Zwick on various projects on consumer credit markets, financial intermediation and household finance.

RESEARCH PROJECTS

Contract Loopholes, 2026. with Jason Donaldson and Giorgia Piacentino
Models loopholes as a consequence of clause-by-clause verification in complex rules and characterizes when selectively bundling interdependent contingencies improves enforcement and governance.

Modular Project Organization, 2025.
Develops a theory of how innovators optimally partition interdependent projects into modules, trading off flexibility/option value against coordination to capture complementarities.

Bargaining with Heterogeneous Beliefs, 2023.
A reputation bargaining model with uncertain, heterogeneous initial beliefs delivers a unique phased war-of-attrition equilibrium, where learning can either reduce inefficiency or prolong delay.

REFEREE WORK

Journal of Corporate Finance

REFERENCES

Jason Roderick Donaldson
Associate Professor of Finance
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Giorgia Piacentino
Associate Professor of Finance
USC Marshall, NBER and CEPR
Email: giorgiapiacentino@gmail.com

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Research Statement for the 2026 NBER Innovation Research Boot Camp

My research agenda aims to develop a unified view of **innovation under interdependence**: when ideas, tasks, or components are complements, innovators must choose what to bundle and coordinate versus what to separate and experiment on. I study how this boundary choice—in organizations and in contracts—shapes (i) the pace and direction of experimentation, (ii) incentives and risk-taking under limited liability and financing constraints, and (iii) governance of complex innovation systems where verification and enforcement are imperfect. A common object in my work is a modular architecture: a partition of a complex portfolio of projects into semi-autonomous units linked through interfaces. This lens speaks directly to the themes on the organization of inventive activity, team-based knowledge production, platforms and standards, and diffusion.

My working paper formalizes how an innovator should **organize a risky, interdependent project portfolio**. The model clarifies the trade-off between *option value* (flexibility to continue or abandon subparts as information arrives) and *coordination value* (capturing complementarities that require joint execution). The core implication is that optimal boundaries track dependence: weaker or offsetting links favor modular experimentation; strong positive dependence favors bundling and coordinated execution. This yields empirical predictions for innovation settings: correlation shocks from shared infrastructure or common shocks should predict integration waves, while decoupling technologies that reduce interdependence should predict modularization.

My current proposal extends the same architecture logic to **contracting and governance in innovation-intensive environments**. Complex rules are often designed and enforced clause-by-clause because comprehensive verification of joint contingencies is costly, but modular enforcement can create *loopholes* when clauses interact. I model this as a constraint on verifying joint states and characterize when loopholes arise and how to mitigate them via *selective closure*: jointly testing highly dependent contingencies while keeping low-dependence parts modular. The project connects to R&D contracting, platform governance, IP and regulatory design and more.

The NBER Innovation Research Boot Camp is an ideal environment to sharpen and stress-test this agenda. The boot camp's focus on the economics of science and idea production, incentives and organization for innovative activity, diffusion and reallocation, and the design of institutions that govern innovation aligns closely with my core mechanisms: interdependence, experimentation, and governance under limited information. I am especially excited by the program's integration with NBER Summer Institute innovation sessions, which would help me refine how my theoretical results map to current empirical frontiers, I am particularly interested in the mechanism of team formation and collaboration networks, patent and text-based measures of technological dependence, and contract design in high-uncertainty R&D relationships.

Dear Brett:

I am writing to recommend **Zichen Zhao**, who is a third-year PhD student at USC, for NBER Innovation Research Boot Camp 2026. He has my highest recommendation.

I have known Zichen for two years. He took an advanced topics course on contract theory in his first year. I then advised his second-year paper. We are now working on a project together with Giorgia Piacentino.

In his second-year paper, Zichen studies modularity. He builds on a literature that dates back at least to Herbert Simon but that, in my reading, still has relatively few formal economics models (e.g., the 2025 JPE paper by Matouschek, Powell, and Reich says it is taking a first step toward studying how to organize modular production).

Zichen's paper, "Modular Project Organization," studies how a firm can organize a risky production process into modules. He considers modules as sets of random variables, called "projects." Those could be independent units of software/code, teams or divisions of employees, or physical inputs to production. The assumptions he makes are only that there are complementarities within modules but that they can fail independently—the benefit of a big module is the efficient integration of the production process when things go well, the cost is the inefficient integration when they go badly.

Despite the generality of the set-up, Zichen still manages to derive sharp results. He does that in two ways that I would not have managed to do myself. First, he develops a necessary condition for local optimality, which allows him to rule out large and small modules in meaningful cases, even when it is effectively impossible to characterize the optimal modular structure. He then introduces three classes of covariance structures, block diagonal, core-periphery, and Toeplitz (effectively a chain structure), under which he manages to derive general properties of the optimal modular structure. The take-away is that the optimal modular structure tracks the covariance structure of the project, which stronger covariance (in the senses Zichen makes precise) favoring larger modules, a prediction which we think can be tested.

He also shows how the organizational problem is computationally hard and studies how simple algorithms could approximate (or fail to approximate) the optimal structure.

Zichen has also been a hard working and insightful coauthor on our joint work.

I think he is outstanding overall. Please do not hesitate to contact me should you need more information.

Jason Donaldson