Chengmou Lei
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To
Kevin Bryan, Ina Ganguli, and Kyle Myers

January 25, 2025

Greetings! My name is Chengmou Lei. I'm writing to apply for the NBER Innovation Research Boot Camp 2025. I am a PhD student in Finance from the Smith Business School, University of Maryland College Park. I will finish my second year PhD in Finance by the time of the Camp. **My contact information can be found in the upper right corner. My supervisor, Liu Yang (lyang1@umd.edu), will provide a letter of recommendation for me.**

I discovered a profound interest in innovation while pursuing a master's program at the Einaudi Institute for Economics and Finance (Bank of Italy). I worked as an RA for a project that looked at the mobility of target firms' inventors post M&A. The project makes me familiar with the related literature and datasets. Being aware of real-world issues of innovation, I developed two related projects. One is my master's thesis, one is a project I started recently. I also derived a preliminary research agenda from the latter one. They are all detailed in my one-page essay. Over the past few years, I have received solid training in economics theory and econometrics. I also have good presentation and communication skills. I believe these qualifications allow me to leverage the Camp's resources fully.

I want to participate in the Camp for three reasons: 1) it helps me know the most leading research topics in the field not only through well-selected papers but also through discussion with fellow scholars from such a community; 2) it provides a chance for me to meet scholars who share the same passion; 3) it helps me refine my research agenda.

I look forward to joining this summer and am happy to provide more information if needed. Thank you for your time and consideration!

Chengmou Lei

Attachment: Recommendation (send separately), CV, Course List, Essay

CHENGMOU LEI

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EDUCATION

University of Maryland - Smith Business School (UMD) 2023-Today
PhD in Finance

Einaudi Institute for Economics and Finance (EIEF, Bank of Italy) & LUISS University 2021-2023
Master in Economics and Finance, 110/110, Full Score on Thesis
Full Scholarship (Tuition Waive + Stipend)

Central University of Finance and Economics (CUFE) 2017-2021
Bachelor in Finance, 89.51/100 (3.7/4.0)

WORK IN PROGRESS

Venture Capital (VC): Bigger-Is-Better Mantra and the Cost of Funding for Stratups

- I try to investigate the impact of an emerging trend: increased concentration in established VCs and emerging micro VCs. I plan to use PitchBook data to answer the following questions: Does the increased concentration of funds in established VC cause an increase in startups' funding costs? Will the established VCs delay their investment to reduce risk and leverage market power to obtain the same return? If there is a delay in the investment stage, can it be filled with micro VCs? How do micro VCs affect startups' performance if they substitute for established ones?

A Tale of Two Investors
Coauthor: Xiao Zhang (Finance, UMD)

- We investigate how investor dispersion affects firms' behaviors. When there are both short-term and long-term investors, a firm's optimal strategy is to choose investment projects aligned with investors' average horizon. However, when the dispersion is high, it is harder for firms to please all investors. Therefore, when a change in investors' horizon or a negative shock requires a firm to adjust its investment, it is more costly for them to adjust towards the optimal. Managers may, therefore, choose not to do anything or cater to only a specific type of investor.

PAST WORKS

Revisit labor market concentration under Work-From-Home: An Integration of Labor Market Boundaries
Supervisor: Alex Xi He (UMD)
Presented: Finance Brownbag, University of Maryland

- Post-COVID work-from-home (WFH) policies have reduced geographic constraints, enabling workers to access remote job opportunities across regions. This shift has expanded local labor market boundaries and altered labor market concentration levels. In this study, I adjust a traditional concentration measurement to include remote job postings and analyze the impact of WFH on labor market concentration using the difference-in-differences (DID) approach. I find that excluding remote jobs significantly biases the concentration estimate. Additionally, I re-estimate the effect of concentration on wages using the two-stage least squares (2SLS) method, finding that concentration exerts downward pressure on wages for occupations with lower education requirements. In contrast, wages for occupations with higher education requirements increase with concentration. These results suggest supply-side shifts in the labor market.

How M&A Affects Firm TFP – a View from Technology Synergy
Supervisor: Fabiano Schivardi (EIEF, Bank of Italy)

- I investigate whether technology synergy affects firm productivity after merger and acquisition (M&A). I distinguish synergy into similarity and complementary. The prior measures the extent to which two firms build on the same knowledge base, and the latter measures the extent to which two firms build on each other's existing knowledge. I observe heterogeneous patterns across low-synergy and high-synergy groups and across different types of synergy. Firms with low technology similarity experience smaller and later efficiency growth than firms with high similarity. Taking into account the extent of reliance on each other's past knowledge, the efficiency increase is more significant. For complementarity, firms with low complementarity also experience smaller and later efficiency growth than firms with high complementarity. Yet, firms with low complementarity still experience larger efficiency growth than firms with low similarity.

How M&A affect Inventor Mobility May 2022 - June 2023
Research Assistant, Supervisor: Franklin Qian (UNC Kenan-Flagler)

- The paper aims to track inventor mobility based on patent records to see whether the acquirer and what type of acquirer retains the target's inventors and target's of inventors will be retained.
- I constructed a comprehensive dataset of M&A deal information and calculated various quantity and quality innovation measurements using patent data from PatentView. I also conducted a preliminary analysis of innovation output at firm-level prior M&A activities using propensity score matching and used Lasso machine learning to select variables

SKILLS

Computer Stata, Python, SAS, SPSS, R
Language Mandarin Chinese, English, Italian

List of all current and completed PhD courses

Chengmou Lei (cmlei@umd.edu)

January 25, 2025

1 Current Course

1. **The Macroeconomics of Imperfect Capital Markets**: The role of financial markets for fluctuations in the macroeconomy.
2. **Corporate Theory**: Theoretical research review in corporate finance.
3. **Special Topics in Finance (Financial Research Methods)**: Empirical asset pricing methods.

2 Completed Course

1. **Econometrics 1**: Least squares estimation and its optimality properties.
2. **Econometrics 2**: Time-series analysis, panel data.
3. **Microeconomic Analysis 1**: Consumer and firm theories, introduction to game theory and its applications in economics.
4. **Microeconomics Analysis 2**: General equilibrium and behavioral economics, decisions under uncertainty, expected utility theory, and economics with private information, including mechanism design, adverse selection, and moral hazard.
5. **Asset Pricing 1**: Discrete-time models of asset pricing, capital markets, and corporate finance.
6. **Asset Pricing 2**: Continuous-time asset pricing models, theories for dynamic markets.
7. **Special Topics in Finance (Financial Research Methods)**: Introduction to empirical research in corporate finance.
8. **Special Topics in Finance (New Developments in Corporate and Household Finance)**: Classic literature on corporate and household finance, with topics on minority finance.
9. **Advanced International Economics I**: Puzzles, modern models, tools and topics of International Finance.
10. **Computational Economics**: How to specify, compute, and estimate a broad set of demand and supply models that will allow you to measure welfare and conduct policy counterfactuals.
11. **Empirical micro-econometrics**: Modern microeconometric methods with a focus on reduced form causal inference.

Application Statement for NBER Innovation Boot Camp 2025

Chengmou Lei (cmlei@umd.edu)

January 25, 2025

My motivation to participate in the NBER Innovation Boot Camp stems from three key reasons: 1) the lack of a dedicated innovation course at the University of Maryland makes this Camp an invaluable opportunity to gain a systematic overview of leading topics in the field; 2) I want to interact with Pierre Azoulay, Ina Ganguli, Ben Jones, and Chad Jones whose works on technology change, and minority entrepreneurship gaps align closely with my research interests; 3) I have developed a preliminary research agenda, and I am eager to refine and deepen it through the Camp. In the subsequent sections of this essay, I will discuss three facets of innovation that captivate me. These three aspects are also my future research directions. I will then outline my current and past research projects related to these topics.

The first aspect of innovation that fascinates me is startup financing. Anecdotal evidence suggests an increasing concentration of funds among large, well-established venture capital (VC) firms, alongside a growing number of micro VCs[1]. These shifts in market dynamics have profound implications for startup financing and innovation creation for two key reasons. First, the increased concentration of funds among large VCs enhances their market power, which could lead to higher financing costs for startups through more VC-friendly terms. Given the established consensus in the literature that startups drive innovation, higher financing costs may place additional pressure on this growth engine. Second, greater market power may incentivize established VCs to delay their investments to later stages while maintaining the same level of returns, creating a potential funding gap for early-stage startups. While micro VCs may help fill this gap, this introduces a "funding-risk misalignment". Literature highlights that good liquidity insulates institutions from small shocks (Wagner, 2007; Khan et al., 2017), yet micro VCs, funding the riskiest stages of startups, often lack the funding capacity to support risk-taking adequately. This could reduce the likelihood of groundbreaking innovations, which usually emerge from risky early-stage endeavors that require the support of stable financing. The second aspect that captivates me is the funding gap that minority entrepreneurs face. Reports highlight the challenges faced by minority groups, such as credit-accessing difficulties Latino small business owners face (report) and the barriers women-led startups encounter in securing venture funding (report). However, these groups are among those that contribute the most to the economic growth of the United States. The third aspect that intrigues me is how technological advancements transform the way VCs screen and guide startups. Big data analysis can help VCs identify high-potential startups that might have been overlooked due to limited data points or human biases—potentially addressing minority funding gaps if discrimination is the contributing factor. Advanced AI models can aid in identifying anomalies and simulating various scenarios, such as market downturns or competitive threats, empowering VC to help startups make more informed strategic decisions.

In my current project, I tested the trend in the first aspect using Refinitiv data. I plan to use Pitchbook data to test my other hypotheses: 1) Does enhanced market power among large VCs raise startups' financing costs? 2) Does it also cause established VCs to shift investments to later stages, potentially leaving a funding gap for early-stage ventures? 3) Can the gap be filled by micro VCs? 4) If so, how do micro VCs' involvements impact startup performance? My master's thesis yields results related to the third focus. I explore technology synergy in public merger pairs and its effects on post-merger productivity. By distinguishing between complementarity and similarity, I demonstrated how synergies drive post-merger productivity, with complementarity yielding higher growth. If the results also hold between startups and established firms, advanced technology can help corporate venture capital find better partners, enhancing matching efficiency. I also worked as an RA before for a project that looked at the mobility of target inventors after the merger and how this affects technology diffusion.

Together, these projects reflect my commitment to understanding the interplay between market dynamics, financing structures, technology, and diversity in fostering innovation. I appreciate your time and consideration and sincerely hope to meet you at the Innovation Boot Camp this summer!

[1] Defined by Crunchbase as managing funds no larger than $50 million