**Chengmou Lei**
*PhD in Finance, University of Maryland*
*240-7918041*
*cmlei@umd.edu*

**To**
*Kevin Bryan, Ina Ganguli, and Kyle Myers*

January 23, 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

+1 2407918041 ⋄ cmlei@umd.edu

## 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 23, 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.

# Essay (1-page)

Chengmou Lei (cmlei@umd.edu)

January 23, 2025

I want to participate in The NBER Innovation Boot Camp because it is an invaluable opportunity for me to know the leading topics in the field and connect with scholars who share the same passion. This enthusiasm has resulted in the current research projects and a preliminary research agenda for my PhD, which I hope to refine through discussions with fellow participants at the Camp.

My profound interest in innovation began with my RA work in my master's and my master's thesis. I worked as an RA for a project where we looked at the mobility of target firms' inventors post-M&A. I examine how innovation synergy (substitutability and complementarity of patents) between merger pairs affects post-merger performance, particularly in innovation. This research offers insights into market dynamics for firms in high-innovation industries.

My current research is motivated by the recent trend: the increasing concentration of funds among established venture capitals (VCs) and the growing number of micro VCs[1]. The literature on market power establishes that a higher market concentration often leads to higher product markups (Burstein et al. (2020), De Loecker et al. (2020), etc.). But none look at the financing cost of startups given their special financing format[2]. This prompts my first research question: Does increasing concentration among established VCs raise startups' cost of funding (more VC-friendly contract terms) through enhanced market power? Finance literature links risk and return (Sharpe (1964), Merton (1973), etc.), but VCs with significant market power may reduce risk by delaying investment stages while maintaining returns through favorable contract terms. This raises my second question: Does increasing concentration lead to later-stage investments? If so, a funding gap may exist for startups traditionally served by established VCs. My third question is: can micro VCs fill this funding gap? If micro VCs substitute for established VCs, assessing how this substitution affects startups' development is important. On the one hand, micro VCs, with fewer portfolio firms, can provide tailored guidance critical for early-stage startups, potentially improving their performance. On the other hand, their limited resources compared to established VCs might hinder startups' growth. This leads to my fourth question: How do micro VCs impact startups' performance? I plan to answer them using Pitchbook data on VC deals and contract terms.

These research questions have significant implications, given existing findings that a startup is the driving engine of innovation. More importantly, the literature finds that good liquidity can insure institutions against small shocks (Wagner (2007), Khan et al. (2017), etc.). If micro VCs, with their smaller funds, substitute established VCs with large funds at early stages, a mismatch in risk-taking capacity could arise, potentially reducing the likelihood of groundbreaking innovation. Exploring this dynamic is a future direction I am eager to pursue.

Instead of postponing the investment stages and increasing returns relative to risk or requesting a higher return per unit of risk and investing earlier. The choice depends on the trade-off between the benefit of monopoly power in early-stage markets and the cost of acquiring information about startups. Early-stage markets have a much smaller total size than later stages but feature more startups with great uncertainty. According to the PitchBook 2024-Q4 venture monitor report, series B is two times the size of pre-seed and series A, series C is almost two times of all earlier rounds combined. Hence, early-stage VCs must invest in many startups and exercise monopoly power to secure favorable contract terms to achieve returns comparable to later-stage investments. However, gathering information on numerous startups is costly, particularly at the early stage. My next planned direction involves modeling these market dynamics and estimating parameters to recover the costs and benefits.

In summary, the Camp would help me gain a systematic understanding of the field's frontier research and better set my research agenda. I'm excited to discuss my research with scholars who share the same passion and contribute to the intellectual community. I look forward to participating this summer!

[1] Labeled in Crunchbase as micro VCs managed a fund no larger than $50 million

[2] Cost of getting investments from VC is not manifested in terms of interest rate like debt, but through contract terms.