Why You Should Care About Entrepreneurship and Innovation

Song Ma

Yale University and NBER

October 2022 | FMA Doctoral Student Consortium

This slide deck was prepared for a talk at the 2022 FMA Doctoral Student Consortium, and it was created to share my thoughts on exciting new areas in entrepreneurship, entrepreneurial finance, and innovation where doctoral students can find new opportunities.

In Chinese, I am sharing this to 抛砖引玉, which can be literally translated to “throw a brick to attract jade”—what it really means to say is that I hope some of my potentially naive/immature thoughts can get brighter minds to think about bigger and better ideas.

I thank Gordon Phillips for inviting me to give this talk. For insightful discussions when preparing this talk, I thank Michael Ewens, David Robinson, and Ting Xu.

I also apologize for missing references to many exciting new work in the area due to the limit of time and spaces.

What Do We Study?

- We study **firm-level** and **economy-wide** forces that determine **productivity and growth**
  - Factors that affect innovation, patenting, entrepreneurship, and the creation of new firms
  - Broader issues: the productivity effects of firms' investment, the composition of the labor force

What Do We Study?

- We study **firm-level** and **economy-wide** forces that determine **productivity and growth**
  - Factors that affect innovation, patenting, entrepreneurship, and the creation of new firms
  - Broader issues: the productivity effects of firms' investment, the composition of the labor force

- This is a field where **financial economists** can contribute significantly
  - Access to finance: financial constraints, unequal access, different securities, ...
  - Incentives: contracting problems, non-pecuniary incentives, ...
  - Financial intermediary: venture capital and private equity, small business lending ...
  - Financial markets: efficient and inefficient responses to entrepreneurship and innovation, ...
  - ...

Plan for the Presentation

1. **Why I am excited about the research field, and you should too!**
2. **Classic questions (very briefly)**
3. **Emerging questions and (potential) future directions**

Why Exciting

Why Do I Find This Area Exciting?

Why Do I Find This Area Exciting?

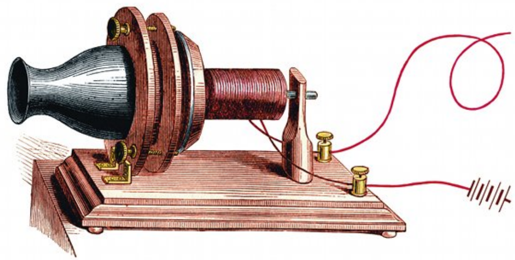
Relevant, Interdisciplinary

Relevant

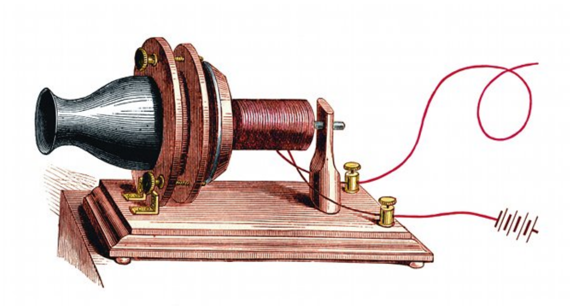
- Look at why our life is what it is today...

New Technologies

New Technologies



New Technologies



Growth

Growth

For the Mankind

For the Mankind

Not Only Financial Economists Care About These Topics...

- But also
  - labor economists
  - IO economists
  - macro economists
  - marketing
  - organizational behaviors
  - business strategy
  - policy makers

(Some) Fundamental Questions

Fundamental Questions

- Access to finance: financial constraints, different securities, capital allocation, ...
  - Relaxing financial constraint (cash windfall, housing collateral, etc.), what happens...
- Financial incentives: contracting problems, non-pecuniary incentives, ...
  - How should we design and value contracting terms in private market financing?...
- Financial intermediary: venture capital and private equity, ...
  - Do VCs add value? Why?
- Financial markets: market responses to entrepreneurial firms and innovation, ...
  - How do financial markets value and misvalue innovation and young firms?
- ...

Future Directions

(1) The Blurry Line: Startup-Incumbent Interactions

- **Traditional paradigm:** startups/entrepreneurs are studied as a "special" group
  - How do startups operate and grow?
  - How do VCs add value to startups?

(1) The Blurry Line: Startup-Incumbent Interactions

- **Traditional paradigm:** startups/entrepreneurs are studied as a "special" group
  - How do startups operate and grow?
  - How do VCs add value to startups?
- **New directions:** Startups interact with incumbents in complicated and interesting ways
  - Through product market and labor market competition
  - Through business collaboration such as innovation
  - Through financing relationship
  - ...

Recent Work

Ma (2020, RFS)

The Life Cycle of Corporate Venture Capital

Song Ma
Yale School of Management

This paper investigates why industrial firms conduct Corporate Venture Capital (CVC) investment in entrepreneurial companies. I test alternative views on CVC by exploiting the entry, investment, and termination decisions of CVC divisions. CVC entry concentrates in firms that experience deteriorations of internal innovation. At the investment stage, CVCs select startups with a similar technological focus but that have a non-overlapping knowledge base, and they integrate technologies generated from these ventures that create strategic value. CVCs are terminated when parent firms' innovation recovers. Overall, the strategic desire to fix innovation weaknesses after adverse shocks motivates firms to adopt CVCs. (*JEL* G24, G34, O32)

Received November 15, 2017; editorial decision March 2, 2019 by Editor Francesca Cornelli. Authors have furnished an Internet Appendix, which is available on the Oxford University Press Web site next to the link to the final published paper online.

Ma, Murfin, Pratt (2022, JFE)

Young firms, old capital☆

Song Ma[a], Justin Murfin[b,*], Ryan Pratt[c]

[a] Yale University and NBER, United States
[b] Cornell University, United States
[c] Brigham Young University, United States

ARTICLE INFO

Article history:
Received 18 August 2021
Revised 18 September 2021
Accepted 18 September 2021
Available online 24 September 2021

JEL classification:
L26
E22
G31

Keywords:
Entrepreneurship
Capital reallocation
Investment

ABSTRACT

Across a broad range of equipment types and industries, we document a pattern of local capital reallocation from older firms to younger firms. Start-ups purchase a disproportionate share of old physical capital previously owned by more mature firms. The evidence is consistent with financial constraints driving differential demand for vintage capital. The local supply of used capital influences start-up entry, job creation, investment choices, and growth, particularly when capital is immobile. Meanwhile, as suppliers of used capital, incumbents accelerate capital replacement in the presence of younger firms. The evidence suggests previously undocumented benefits to co-location between old and young firms.

(2) The Blurry Line: Public and Private Markets

- **Traditional paradigm:** private financing is small and independent from the public market
  - Private market and public market are often studied separately
  - “Event-study” style research design for VC and PE intervention

(2) The Blurry Line: Public and Private Markets

- **Traditional paradigm:** private financing is small and independent from the public market
  - Private market and public market are often studied separately
  - "Event-study" style research design for VC and PE intervention
- **New directions:** Private equity is the "new normal;" interactions with public markets
  - The "competition" and "complementarities" between private and public markets
  - Firm and investor behaviors across private and public markets
  - Financial regulation on privately held firms
  - Market efficiency in a world with more active privately held firms

Recent Work

Ewens and Farre-Mensa (2020, RFS)

The Deregulation of the Private Equity Markets and the Decline in IPOs

Michael Ewens
California Institute of Technology

Joan Farre-Mensa
University of Illinois at Chicago

The deregulation of securities laws—in particular the National Securities Markets Improvement Act (NSMIA) of 1996—has increased the supply of private capital to late-stage private startups, which are now able to grow to a size that few private firms used to reach. NSMIA is one of a number of factors that have changed the going-public versus staying-private trade-off, helping bring about a new equilibrium where fewer startups go public, and those that do are older. This new equilibrium does not reflect an initial public offering (IPO) market failure. Rather, founders are using their increased bargaining power vis-à-vis investors to stay private longer. (*JEL* G24, G28, G32)

Received March 8, 2018; editorial decision January 25, 2020 by Editor Andrew Karolyi. Authors have furnished an Internet Appendix, which is available on the Oxford University Press Web site next to the link to the final published paper online.

Iliev and Lowry (2020, JF)

Venturing beyond the IPO: Financing of Newly Public Firms by Venture Capitalists

PETER ILIEV and MICHELLE LOWRY*

ABSTRACT

Contrary to conventional wisdom, we document that approximately 15% of venture capitalist (VC)-backed firms raise additional capital from VCs in the five years after going public. We propose two explanations for why firms revert to VC financing post-IPO (initial public offering). First, we hypothesize that VC participation in post-IPO financing represents an efficient solution to informational problems that would otherwise constrain firms' abilities to exploit value-increasing investments. Analyses of firm and VC characteristics, together with the finding that these investments are value-increasing for both VCs and the underlying companies, support this hypothesis. We find no support for the alternative that agency conflicts motivate these investments.

(3) Players Beyond Firms

- **Traditional paradigm:** firms have been the center of EFI related studies
  - How do *firms* organize and finance R&D?
  - What are the impacts of shareholders/managers/employees, etc.?

(3) Players Beyond Firms

- **Traditional paradigm:** firms have been the center of EFI related studies
  - How do *firms* organize and finance R&D?
  - What are the impacts of shareholders/managers/employees, etc.?
- **New direction:** Government, universities, funding agencies, etc.
  - Firms are relatively *simple* organizations!
  - R&D investments by government, universities, and others are tremendous and opaque
  - Huge opportunities to think about "funding" the development of science

Recent Work

Bai, Bernstein, Dev, Lerner (2022, WP)

THE DANCE BETWEEN GOVERNMENT AND PRIVATE INVESTORS:
PUBLIC ENTREPRENEURIAL FINANCE AROUND THE GLOBE

Jessica Bai
Shai Bernstein
Abhishek Dev
Josh Lerner

Working Paper 28744
http://www.nber.org/papers/w28744

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
April 2021, Revised March 2022

Azoulay, Graff-Zivin, Li, Sampat (2019, REStud)

Public R&D Investments and Private-sector Patenting: Evidence from NIH Funding Rules

PIERRE AZOULAY
MIT and NBER
JOSHUA S. GRAFF ZIVIN
UCSD and NBER
DANIELLE LI*
MIT and NBER
BHAVEN N. SAMPAT
Columbia University and NBER

First version received February 2016*; Editorial decision February* 2018*; Accepted June* 2018 (*Eds.*)

We quantify the impact of scientific grant funding at the National Institutes of Health (NIH) on patenting by pharmaceutical and biotechnology firms. Our article makes two contributions. First, we use newly constructed bibliometric data to develop a method for flexibly linking specific grant expenditures to private-sector innovations. Second, we take advantage of idiosyncratic rigidities in the rules governing NIH peer review to generate exogenous variation in funding across research areas. Our results show that NIH funding spurs the development of private-sector patents: a $10 million boost in NIH funding leads to a net increase of 2.7 patents. Though valuing patents is difficult, we report a range of estimates for the private value of these patents using different approaches.

Key words: Economics of science, Patenting, Academic research, NIH, Knowledge spillovers

JEL Codes: O3, I1, H4, H5

(4) A Behavioral Foundation

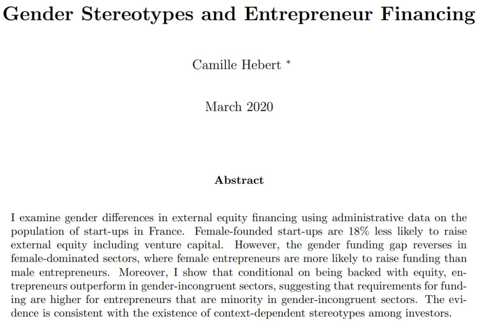
- **Traditional paradigm:** Rational framework; or vaguely framed behavioral forces
  - The entrepreneurship risk and return "puzzle"
  - Correlating entrepreneurship and innovation with some "behavioral factors"

(4) A Behavioral Foundation

- **Traditional paradigm:** Rational framework; or vaguely framed behavioral forces
  - The entrepreneurship risk and return "puzzle"
  - Correlating entrepreneurship and innovation with some "behavioral factors"
- **New direction:** Borrow insights from the development of behavioral finance
  - How do entrepreneurs and investors form their beliefs?
  - Do entrepreneurs have different utility functions?
  - Is there a way to find and correct biases in entrepreneurial investment?

Recent Work

Hebert (2022, JF R&R)


Gender Stereotypes and Entrepreneur Financing

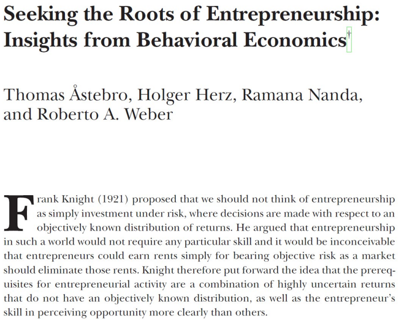
Camille Hebert *

March 2020

Abstract

I examine gender differences in external equity financing using administrative data on the population of start-ups in France. Female-founded start-ups are 18% less likely to raise external equity including venture capital. However, the gender funding gap reverses in female-dominated sectors, where female entrepreneurs are more likely to raise funding than male entrepreneurs. Moreover, I show that conditional on being backed with equity, entrepreneurs outperform in gender-incongruent sectors, suggesting that requirements for funding are higher for entrepreneurs that are minority in gender-incongruent sectors. The evidence is consistent with the existence of context-dependent stereotypes among investors.

Astebro, Herz, Nanda, Weber (2014, JEP)


Seeking the Roots of Entrepreneurship: Insights from Behavioral Economics†

Thomas Åstebro, Holger Herz, Ramana Nanda, and Roberto A. Weber

Frank Knight (1921) proposed that we should not think of entrepreneurship as simply investment under risk, where decisions are made with respect to an objectively known distribution of returns. He argued that entrepreneurship in such a world would not require any particular skill and it would be inconceivable that entrepreneurs could earn rents simply for bearing objective risk as a market should eliminate those rents. Knight therefore put forward the idea that the prerequisites for entrepreneurial activity are a combination of highly uncertain returns that do not have an objectively known distribution, as well as the entrepreneur's skill in perceiving opportunity more clearly than others.

(5) Modernized Entrepreneurial Finance and Innovation

- **Traditional paradigm:** The startup financing model from the 1980s...
  - Venture capital and venture capitalist from the 1980s model
  - Banks as the primary lenders

(5) Modernized Entrepreneurial Finance and Innovation

- **Traditional paradigm:** The startup financing model from the 1980s...
  - Venture capital and venture capitalist from the 1980s model
  - Banks as the primary lenders
- **New direction:** New trends with the development of the field
  - AI and ML in investment
  - New VC models
  - FinTech lenders

Recent Work

Lyonnet and Stern (2022, WP)

Venture Capital (Mis)Allocation in the Age of AI

Victor Lyonnet Léa H. Stern*

9th June, 2022

Abstract

We use machine learning to study how venture capitalists (VCs) make investment decisions. Using a large administrative data set on French entrepreneurs that contains VC-backed as well as non-VC-backed firms, we use algorithmic predictions of new ventures' performance to identify the most promising ventures. We find that VCs invest in some firms that perform predictably poorly and pass on others that perform predictably well. Consistent with models of stereotypical thinking, we show that VCs select entrepreneurs whose characteristics are representative of the most successful entrepreneurs (i.e., characteristics that occur more frequently among the best performing entrepreneurs relative to the other ones). Although VCs rely on accurate stereotypes, they make prediction errors as they exaggerate some representative features of success in their selection of entrepreneurs (e.g., male, highly educated, Paris-based, and high-tech entrepreneurs). Overall, algorithmic decision aids show promise to broaden the scope of VCs' investments and founder diversity.

Gopal and Schnabl (2022, RFS)

The Rise of Finance Companies and FinTech Lenders in Small Business Lending

Manasa Gopal
Scheller College of Business, Georgia Institute of Technology

Philipp Schnabl
NYU Stern, NBER, and CEPR

We document that finance companies and FinTech lenders increased lending to small businesses after the 2008 financial crisis. We show that most of the increase substituted for a reduction in bank lending. In counties in which banks had a larger market share before the crisis, finance companies and FinTech lenders increased their lending more. We find no effect of reduced bank lending on employment, wages, and new business creation by 2016. Our results suggest that finance companies and FinTech lenders are major suppliers of credit to small businesses and played an important role in the recovery from the 2008 financial crisis. (*JEL* G21, G23, G01)

Some General Research Advice In This Field

1. **Read broadly, observe carefully**
   - Papers from other fields
   - More importantly, books, magazines, newspapers, anything interesting
2. **Be obsessed with institutional details**
   - No classes teach institutional details; but you are expected to know them very well
   - Do your analysis only after you know the data very well
3. **Balance your research portfolio**
   - Some exciting projects are going to be long-term (e.g., 3-4 years before draft v1...)
   - Balance with some more “standard” projects

Concluding Remarks

Concluding Remarks

- Entrepreneurship, entrepreneurial finance, and innovation is still a young exciting field
- New directions:
  - Startups and incumbents interact with each other
  - Private and public market boundaries are blurry
  - Players beyond firms are equally important
  - A behavioral foundation of entrepreneurial behaviors
  - EFI in the modern era
- I look forward to seeing your exciting work!