

Interactions Between Startups and Incumbents

WEFI Lecture Series

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Yale School of Management

October 12, 2020

Thanks for Joining!

- I hope everyone is well and healthy!
- I prepared a lot of slides (you will see why)
 - Apologies if I do not have time to fully answer your deep questions
- Happy to Discuss!
 - My Email: song.ma@yale.edu
 - Please drop an email if you have comments or questions
 - I will also stay after the talk

Young Firms Are Important and Fun...

On Small Business

When we were small: Ben & Jerry's



On Small Business

When we were small: Whole Foods

A look back at the early years of the natural foods empire.



So We Asked Many Questions About Startups...

- What motivate people to become entrepreneurs?
- What kind of constraints do startups face? Financial, talent, regulatory, etc.
- How do startups obtain financing and how useful are VCs?
- ...

But...

- Startups Do Not Live In Vacuum...
- As soon as they enter the economy, they start interact with incumbents



Real-world Discussions: Why This Matters

Bloomberg **Opinion**

Technology & Ideas

Big Tech Sets Up a 'Kill Zone' for Industry Upstarts

Today's star companies hire the best engineers and copy the novel ideas of startups, choking off potential competition.

PRODUKTER LÖSNINGAR SUPPORT

SAMSUNG

FÖRETAG KONSUMENT Q

Dela

Others

How partnering with startups is helping incumbents grow

For a long time, incumbents didn't need to worry about competition from startups because the barrier to entry was too high. The auto industry, for instance requires billions of startup costs so you would think that Ford and General Motors would be safe from such disruption.

Ford And GM Mitigate EV Development Risk By Partnering With Startups

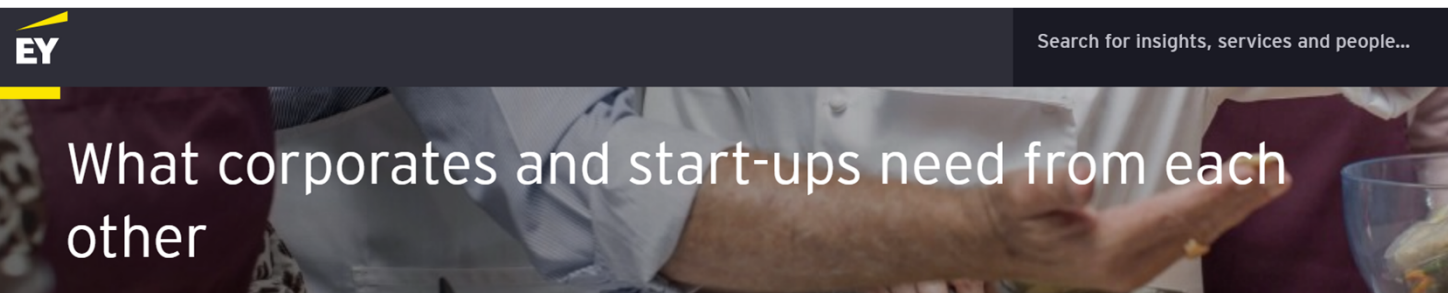


by **Brett Foote**
September 10, 2020, 7:40 am

2

Taiwan heavyweights drive next era of corporate-startup collaboration

25 September 2020 | News



What corporates and start-ups need from each other

Don't Be Intimidated By Giants in Your Market. Use These Strategies to Figure Out Who Your Real Competition Is.

It may seem like that big incumbent is a major threat, but they could be sleeping on the job.

More...

Apple reportedly exploring acqui-hire of self-driving startup Drive.ai

Darrell Etherington @etherington / 8:38 am EDT • June 6, 2019

 Comment

How To Recruit Talent—When You're Competing With Giants

How do you stand out in a crowded market?



BUSINESS
INSIDER

[HOME](#) > [TECH](#)

Why So Many Startups Are Being Acqui-Hired

Jay Yarow Aug 10, 2012, 4:10 PM

Forbes

EDITORS' PICK | 18,227 views | Jul 16, 2020, 03:53pm EDT

Amazon-Zoox Deal Details Leak And Hint At Expensive Acqui-hire



Brad Templeton Senior Contributor

[Transportation](#)

I cover robocar technology & previously worked on Google's car team.



tech.co



6 Reasons People Leave Big Companies To Join Startups

GeekWire

NEWS

JOBS

EVENTS

RESOURCES

ABOUT



Search



Trending: Amazon jumps into virtual tourism, offering live one-on-one experiences around the world

Startup founders: Here's how to convince people to join your company over the big tech giants

This Talk: Central Question

- Q: How do startups and incumbents interact with each other? Why?**
- Define “interactions”
 - How one’s presence and actions affect the other’s behaviors
 - Could be explicit (direct engagement) or more subtle (indirect influence)
- Define the “scope” of interactions
 - Innovation is a central dimension
 - Also: labor, financing, physical capital, ...

Caveats

1. This is not a “well-defined” literature
 - This is a way to thread seemingly unrelated topics together
 - Help us organize what we know, discover unknown and inter-disciplinary questions
2. “Startups”
 - We won’t be explicitly distinguishing small vs. young firms in this talk
 - They share some key properties for the purpose of this talk
3. Might have missed a lot of good papers...
 - Some are just too famous ... ☺
 - Limited by my knowledge and the 75min time limit

Outline

- **Preparation:** build the “world” for our discussion with startups and incumbents
 - Assumptions about the startup-incumbents difference
- **Interactions:** key findings and economics
 - In what dimensions do they interact, what are some key facts and economic mechanisms?
 - Why do those interactions matter?
- **Thoughts on future work**
 - What are missing and what are changing?

“Preparation”

Let Us Think About Two Companies

– Startup: Song's Ice-Cream



– Carol & Chloe (C&C) Group



Assumptions When Discussing Startups and Incumbents

Startups:

A1. Startups are more **financially constrained** than incumbents

A2. Startups are more likely to produce **disruptive innovation**

A3. Startups are more **experimental and uncertain**

Incumbents:

A4. Incumbents already own (to some extent to) **market power**

A5. Incumbents have **more resources (marketing, knowledge, reputation)**

Why Do Startups and Incumbents Interact?

- They have the **common goal**: maximize their own profit
- The **differences in resources and constraints** motivate interactions
- Startups
 - Collect resources
 - Survive, and grow themselves
bigger and faster
- Incumbents
 - Protect existing resources/capital
 - Benefit from startup innovation
 - Deter startup entry

**For now, those are vague—will be clearer as we
move into specific topics**

The Interactions

1. Innovation



- Imagine—Song’s Ice Cream is developing a recipe for **“ZERO-Calorie Ice Cream”** that actually tastes great

Innovation

- Traditional view, or the simple narrative about entrepreneurial innovation, is that startups “creatively destruct” the incumbents in this process.
- But, in practice, there are a ton of interactions in this process...

Starting from These Assumptions

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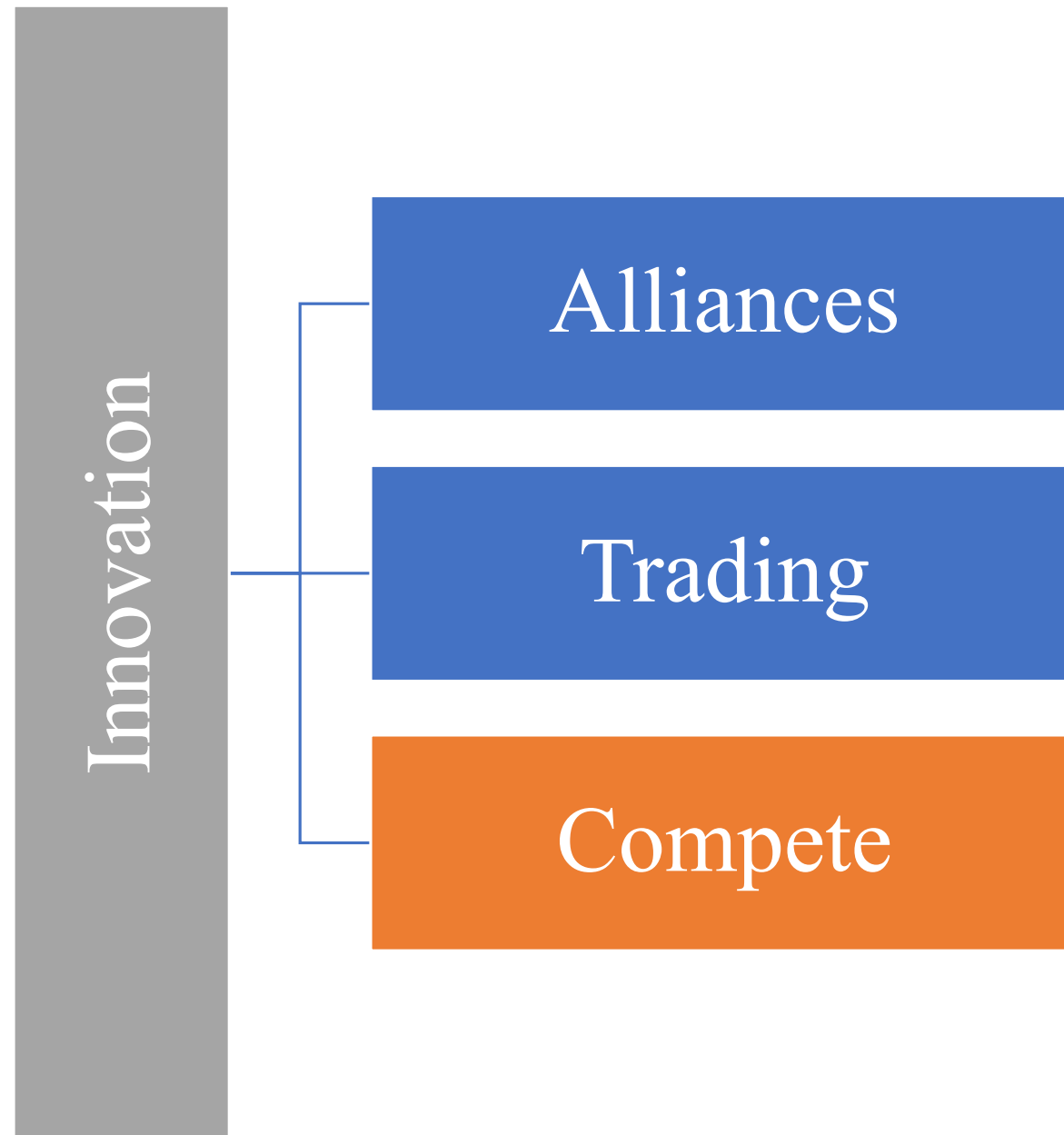
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Forms of Direct Innovation Interactions



- Alliances
 - Co-development, etc.
- Trading of innovation assets
 - Licensing, innovation transfer
- Compete
 - Deter startup entry

1.1 Alliances

- Co-development: Strategic alliances
 - An arrangement between two companies to undertake a mutually beneficial project while each retains its independence
- Imagine Song's Ice Cream and C&C Group enter a strategic alliance



Aghion & Tirole (1994) + Lerner & Merges (1998)

- To rationalize the existence and design of alliances...
- Aghion and Tirole (1994) uses an incomplete contract framework
 - **Incentives (A2):** Keep development outside to flexibly incentivize research-intensive startups and avoid under-investment problem
 - **Bargaining Power (A1 and A5):** The split of the control rights hinges on the relative strength/importance of wedges in research capability and financial resources



Aghion & Tirole (1994) + Lerner & Merges (1998)

- Lerner and Merges (1998):
 - A textbook test of the theory, biotechnology industry
 - Uses both case studies and empirical analysis
- Main findings:
 - Code the detailed empirical contract design of alliances
 - Wedges in financial resources affect the design of the alliance contracts (supporting the bargaining power)
 - Did not find evidence that the uncertainty/riskiness of the disruptive innovation matter

Control right

Key aspects of alliance management:

1. Right to manage clinical trials
2. Right to undertake process development
3. Right to manufacture final product
4. Right to market universally
5. Right to market product alone

Determination of alliance scope:

6. Right to expand alliance
7. Right to extend alliance
8. Right to terminate alliance without cause
9. Right to terminate particular projects
10. Right to sub-license
11. Right to license after expiration/
termination
12. Right to 'shelve' projects

Control of intellectual property:

13. Ownership of patents
14. At least partial patent ownership
15. Control of patent litigation
16. Right to know-how transfer
17. Ownership of core technology
18. Right to delay publications
19. Right to suppress publications

Governance structures:

20. Control of top project management body
21. Seat on R&D firm's board
22. Equity in R&D firm
23. Right to participate in R&D firm's
financings
24. Right to register R&D firm's stock
25. Ability to make public equity purchases

Alliances As A Way to Fix Internal Innovation Problems

- Robinson (2008) provides an alternative rationale for alliances
 - That rationalizes why incumbents creates
- The idea (building up Stein, 1997)
 - The key assumption is that certain investment contracts are enforceable between firms (like an alliance contract) but not internally.
 - Riskier/explorative projects are harder to incentivize internally because the “reward for risks” may not be enforceable
 - As a result, riskier projects (that startups are good at) should be arranged externally
- Empirical test: using a large sample of alliances from SDC platinum
 - The paper finds supporting evidence to this conjecture

Strategic Alliances and Ex Post Performance

- What Are the Ex Post Impact of Strategic Alliances?
- Ozmel, Robinson, and Stuart (2013)
 - Alliances activities lead startups to enter more startups in the future but less VC investment
 - The idea is the alliances help address information asymmetry but introduce conflicts of interests with future investor
- Li, Qiu, and Wang (2019)
 - Firms entering strategic alliances pool resources and share knowledge
 - Lead to more, higher quality, and more explorative patents

1.2 Licensing



Market for Technology
(MFT)



Right to Use

Royalty



- A patent license agreement is a contract between a patent owner (licensor) and a licensee that defines the terms under which the licensee may make, sell, and use a patented invention.
- The agreement also provides how royalties will be paid to the patent owner.

Arora, Fosfuri, and Gambardella (2001); Gans and Stern (2003)

- Market for technology is a very broad literature.
 - I strongly recommend the above two readings
- Instead of reviewing the literature, I would like to provide a not so well-known licensing data source for those with more finance background.

Patent Licensing Data in SEC Filings

- Important licensing agreements are often filed as material contracts
 - Licensing parties, royalty (sometimes), terms, among other things

LICENSE AGREEMENT

THIS LICENSE AGREEMENT (“**Agreement**”) is entered into as of the 18th day of August, 2011 (the “**Execution Date**”), by and between Puma Biotechnology, Inc., a corporation organized and existing under the laws of Delaware with offices at 10940 Wilshire Blvd, Suite 600, Los Angeles, CA 90024 (“**LICENSEE**”) and Pfizer Inc., a corporation organized and existing under the laws of Delaware with offices at 235 East 42nd Street, New York, NY 10017 (“**PFIZER**”), on its own behalf and on behalf of its Affiliates. LICENSEE and PFIZER may, from time-to-time, be individually referred to as a “**Party**” and collectively referred to as the “**Parties**”.

RECITALS

WHEREAS, PFIZER controls, directly or through its affiliates, certain technology relating to a compound known as neratinib, and is conducting Phase III clinical trials of such compound for the treatment of cancer; and

WHEREAS, LICENSEE wishes to obtain, and PFIZER wishes to grant, at the Closing (as defined below) certain licenses under such technology for the development, manufacture and commercialization of neratinib worldwide, on the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual agreements and covenants set forth herein and other good and valuable consideration, the receipt and sufficiency of which the Parties hereby acknowledge, the Parties, intending to be legally bound hereby, agree to the foregoing and as follows:

<https://www.sec.gov/Archives/edgar/data/1401667/000119312511343919/d271369dex101.htm>

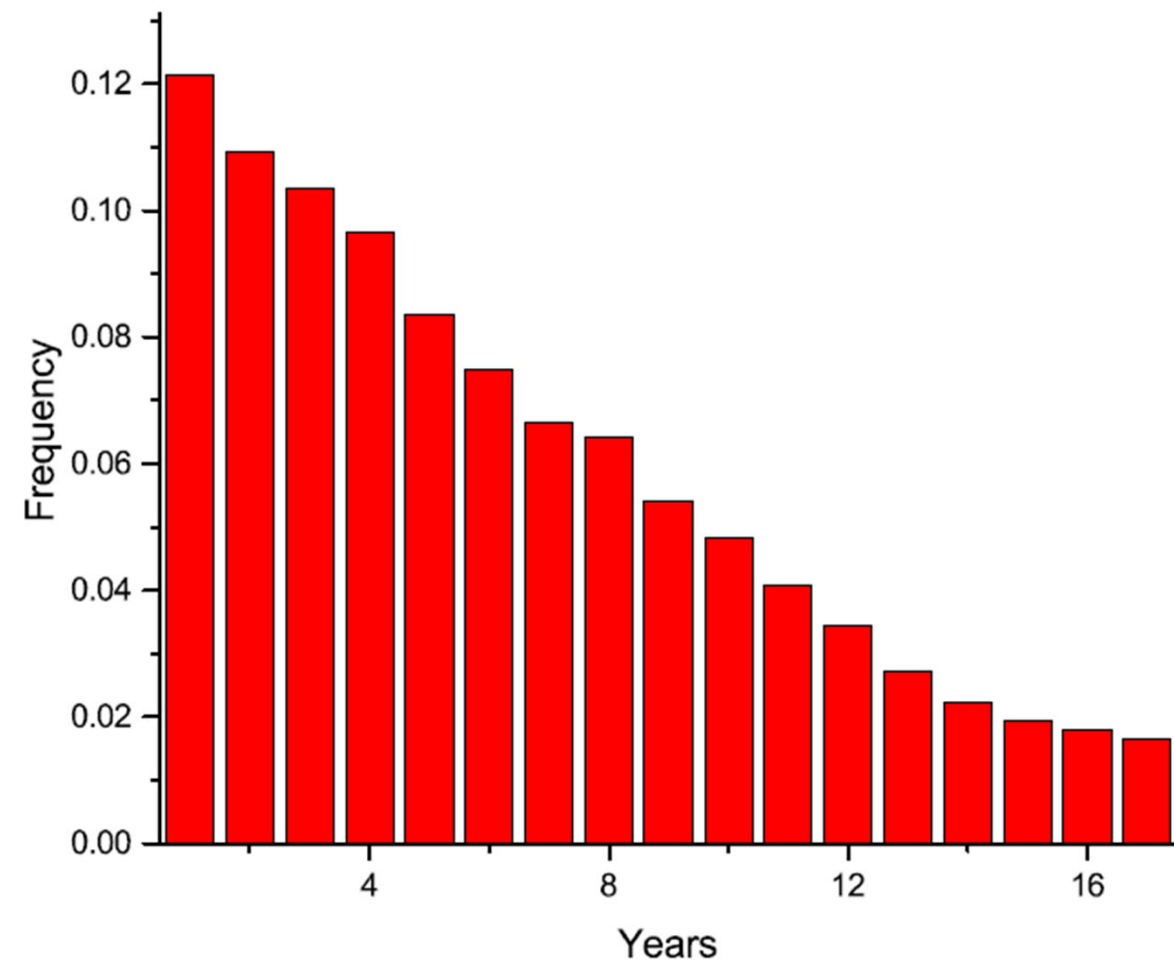
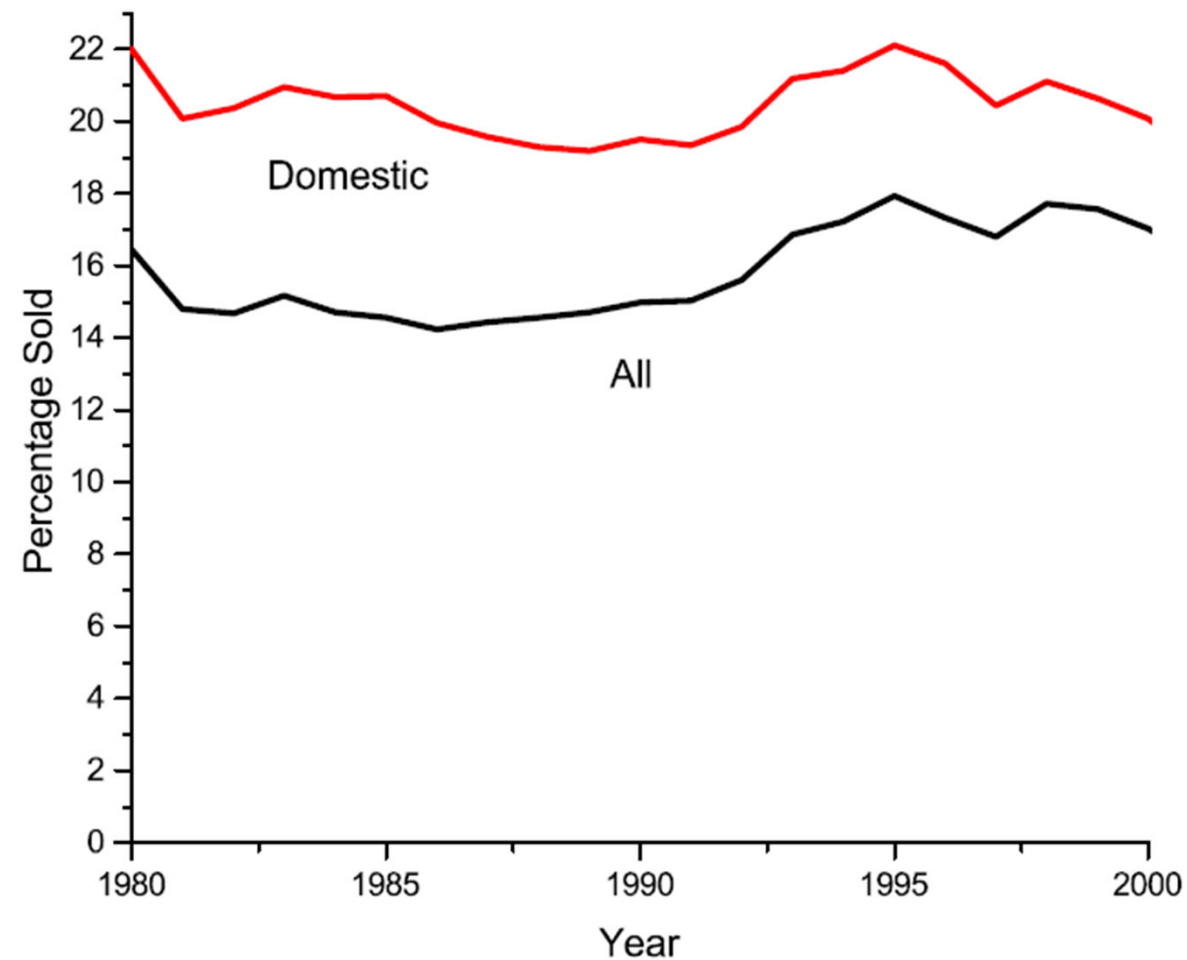
1.3 Patent Trading and Reallocation

- Patent trading is the “extreme” end of innovation interactions
 - in which case the patent from one firm is completely transferred to the other
- “Universal” Data: This information is tracked, accurately, in USPTO Patent Assignment (and Reassignment) Data

	Alliances	Licensing	Patent Trading
Stage	In-development or post-development	Post-development	Post-development
Ownership	Partial	Partial	Full

Serrano (2010); Akcigit, Celik and Greenwood (2016)

- On average 16% of USPTO patents are traded
- Average trading age is 5.48 years



Figuerola and Serrano (2019)

- The paper examines the patent flows between small vs. big firms
- Key findings
 - Small firm patents are **70%** more likely to be traded
 - Small selling to big is **5 times** more likely than a big selling to small firms



1.4 Adding Market Power

Startups:

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Startup Innovation is Acquired to Be “Killed”

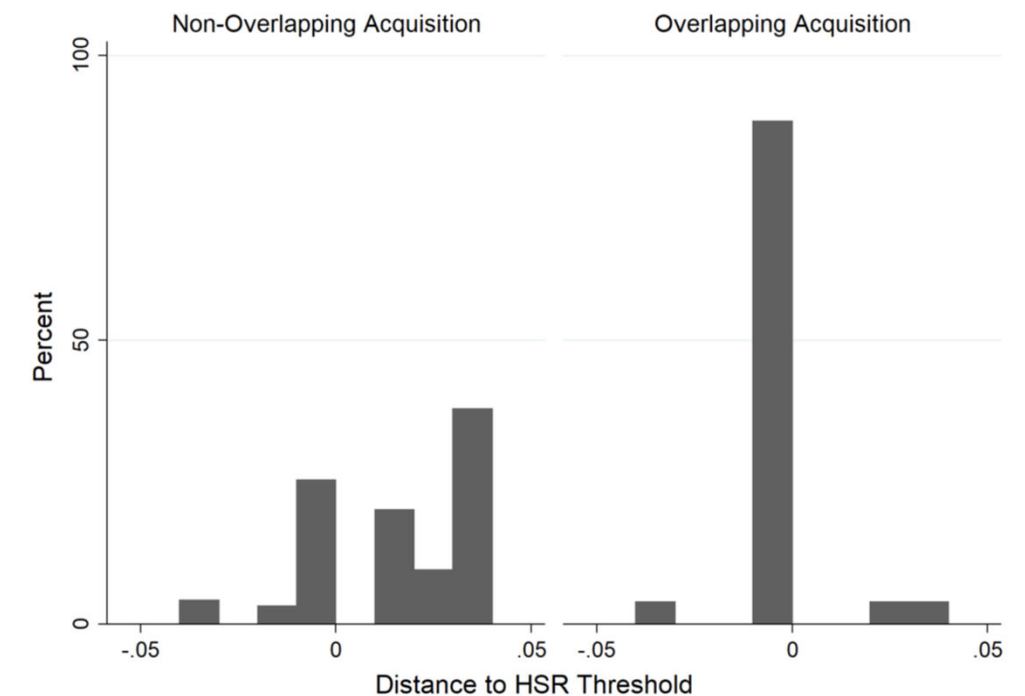
- Cunningham, Ederer, and Ma (2020)
- “Killer acquisitions”:
 - An incumbent firm may acquire an innovative target and terminate the development of the target's innovations to preempt future competition.
- The key insight of the paper:
 - for incumbents with market power, they are incentivized to protect their market share/profit by paying good price to acquire promising innovation but forgo costly and uncertain development
- Data source: PharmaProject, TrialTrove, and Acquisition data



Continued: Test on Pharmaceutical Industry

- Find that acquisitions of overlapping (substitute) projects by an incumbents often leads to the termination of the target startup's project
- These acquisitions often fly under the FTC scrutiny (HSR threshold)
- Related reading: Wallmann (2019, AER: Insights)

	Development Event = 1					
	(1)	(2)	(3)	(4)	(5)	(6)
I(Acquired) × I(Post) × Overlap	-0.037*** (0.013)	-0.033** (0.014)	-0.029* (0.015)	-0.041** (0.019)	-0.043** (0.021)	-0.054** (0.024)
I(Acquired) × I(Post)	-0.020*** (0.006)	-0.016** (0.007)	-0.017** (0.009)	-0.024** (0.010)	-0.018 (0.011)	-0.018 (0.013)
I(Acquired) × Overlap	0.004 (0.008)	0.009 (0.009)	0.026** (0.011)			
I(Acquired)	-0.002 (0.004)	-0.004 (0.005)	-0.011 (0.012)			



Kamepalli, Rajan, and Zingales (2020) “Kill Zone”

- Isn't it a good thing that those startups can obtain high-value acquisition deals down the road?
 - Phillips and Zhdanov (2013) suggests that this might be the case
- Cunningham et al. (2020): There could be a social cost
- Kamepalli et al. (2020): The existence of powerful incumbents introduces barriers to startups' customer acquisition and technological adoption, which in turn affects entrepreneurial financing.
- More on this WEFI next week by Raghu Rajan



Antitrust: Fix the Distortion in the Incumbent-Startup Competition

INVESTIGATION OF COMPETITION
IN DIGITAL MARKETS

MAJORITY STAFF REPORT AND
RECOMMENDATIONS

SUBCOMMITTEE ON ANTITRUST,
COMMERCIAL AND ADMINISTRATIVE LAW
OF THE COMMITTEE ON THE JUDICIARY

Jerrold Nadler, Chairman, Committee on the Judiciary

David N. Cicilline, Chairman, Subcommittee on
Antitrust, Commercial and Administrative Law



UNITED STATES
2020

Recap on Innovation Interactions

- The narrative of startups producing disruptive innovation to replace incumbents should be considered with the active interactions between the two sectors
- These interactions
 - Are largely driven by the wedges of innovation capability and their resources
 - Take different forms (alliances, licensing, trading, etc.)
- Innovation interactions are a central piece that drives some other dimensions to follow—financing, labor, etc.
- Topics not reviewed: Indirect innovation interactions like spillovers
 - Peri (2005), Matray (2020), etc.

2. Financing Relationship

- Another important dimension of startup-incumbent interactions is through financing arrangements
 - In the “Innovation” section, most of the transactions involve financial transaction as well
 - For example strategic alliances involve capital contribution, licensing agreements need royalty payment
 - But here we consider deals where the major component is a financing one

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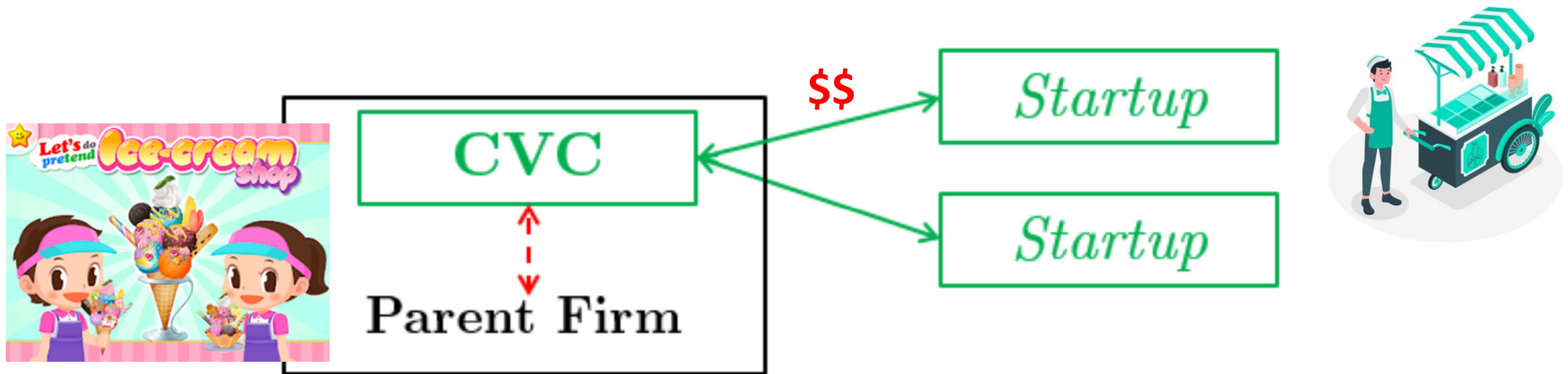
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2.1 Incumbents Finance Startups

- One direction of this is very natural—incumbents invest in startups
 - The most prominent type is corporate venture capital (CVC)
 - Imagine, the C&C Group creates a C&C Venture to invest in startups



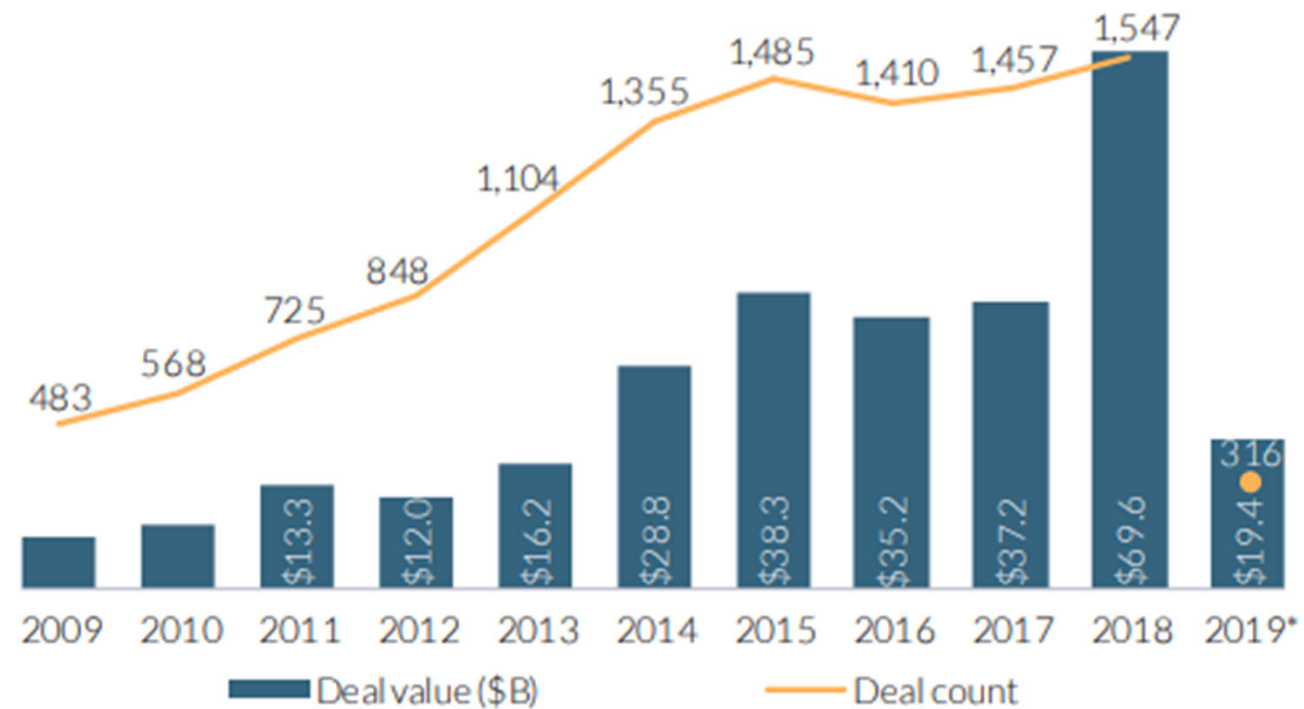
Differences Between CVC and Alliances

- Alliances
 - **Focused:** often with a specific development goal in mind
 - **Clear complementarity:** firms pooling resources together
 - **Rights:** Both parties get (to some extent)
- CVCs are a bit puzzling as the interaction is in a weak form
 - **Diverse:** Incumbents invest in a wide range of early-stage investors
 - **Loose control:** Without contracted goal of development/strong control
 - **Clearly alternative:** independent Venture Capitalist

Incumbents Finance Startups: Corporate VC

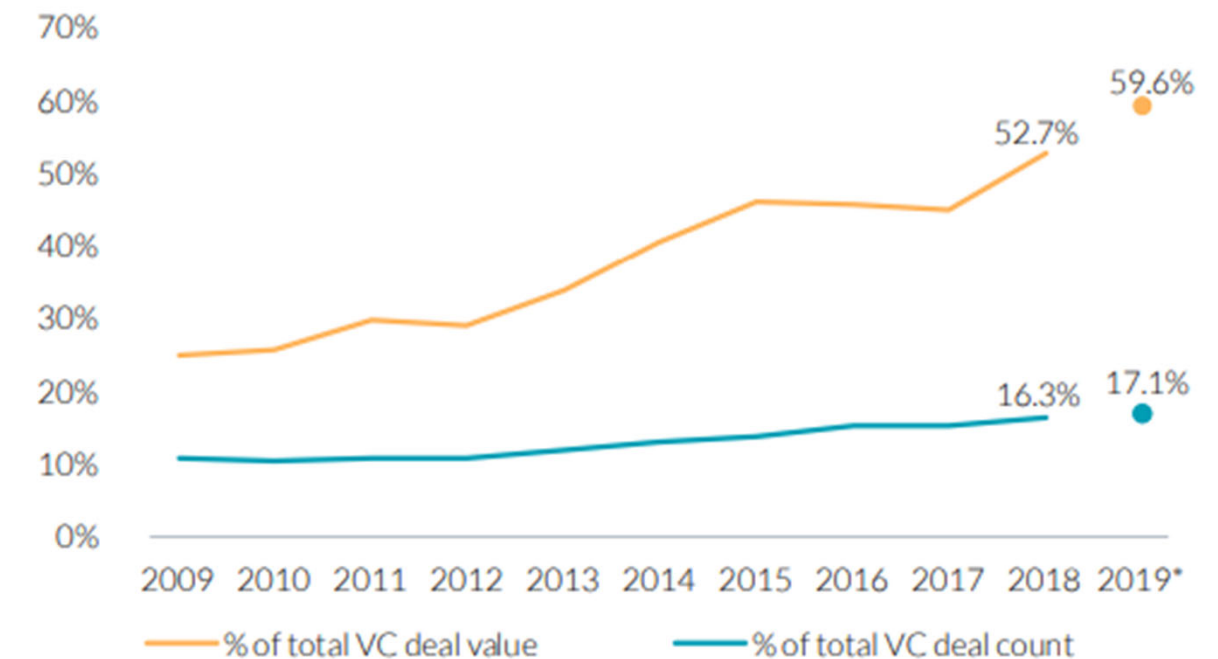
Recent explosion in CVC activity continued early in 2019

US VC deal activity with CVC participation



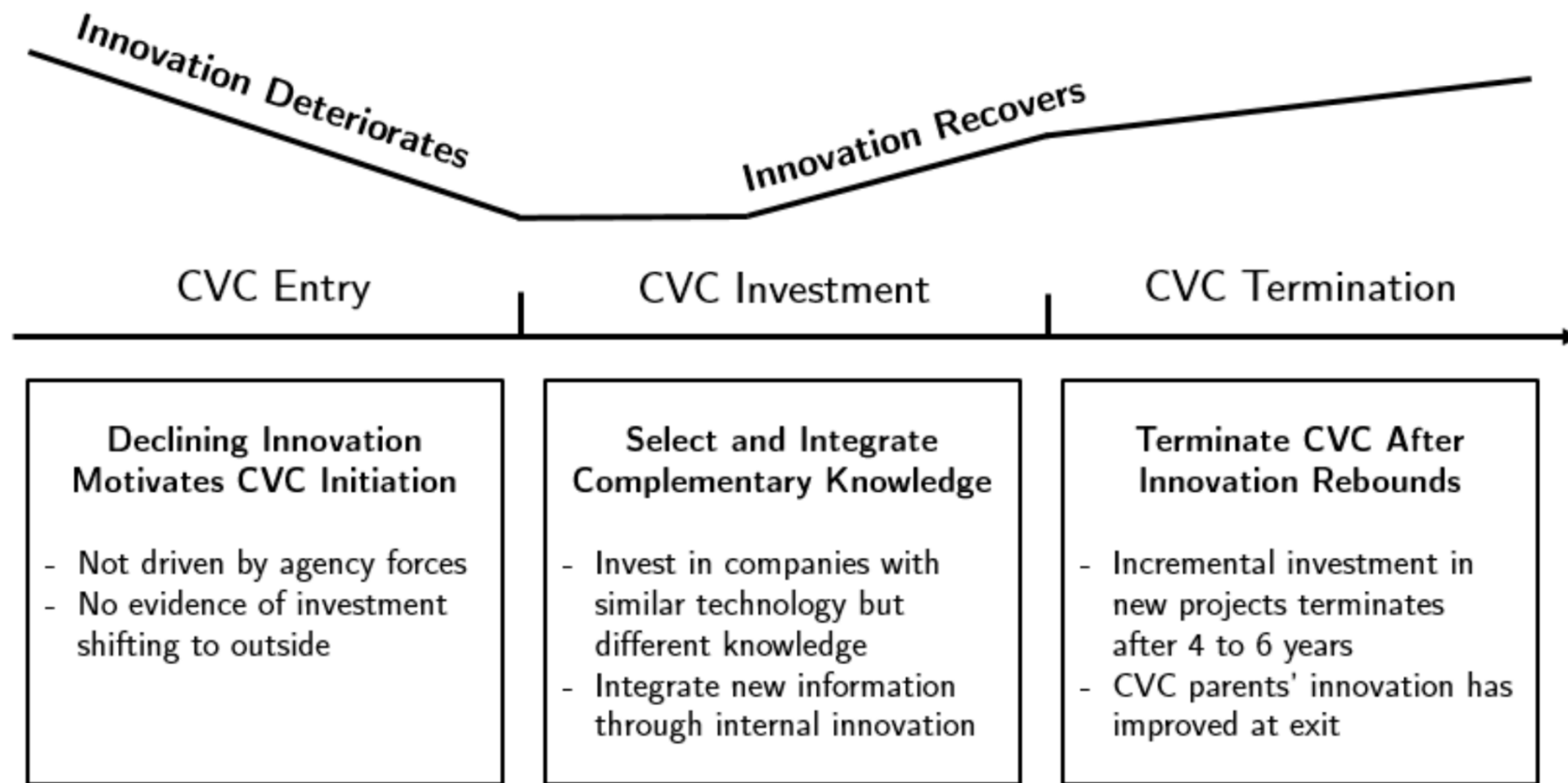
Deals with CVC investors continue to represent over 50% of VC deal value

Deals with CVC participation as proportion of total US VC



Source: PitchBook-NVCA

Incumbent-side Problem: Ma (2020)



- Using CVC initiation, investment, and termination decisions from 1980 to 2007
- Creates a measure of **technological obsolescence**

- CVC is used to **fix weaknesses** by **learning innovation knowledge** from startups.
- CVCs are often initiated following innovation deterioration (obsolescence), make strategic innovation, and are often terminated after regaining internal innovation

Lerner (2012) and Gompers and Lerner (1999)

Bright-side

- Lerner (2012) cautiously proposes that CVC may be the future for “The architecture of innovation”
- It combines the creativity of startups, the knowledge stock of incumbents, and the risk-tolerance/long-termism of VC

Dark-side or suspicion

- CVCs might be “dumb money”
- CVC investors are not incentivized well compared to other venture capitalist
- The relation between CVCs and the parent organization is also too complicated

Do CVCs Create Values for Parents, Under What Conditions?

CVC investment impact on Tobin's q by program go

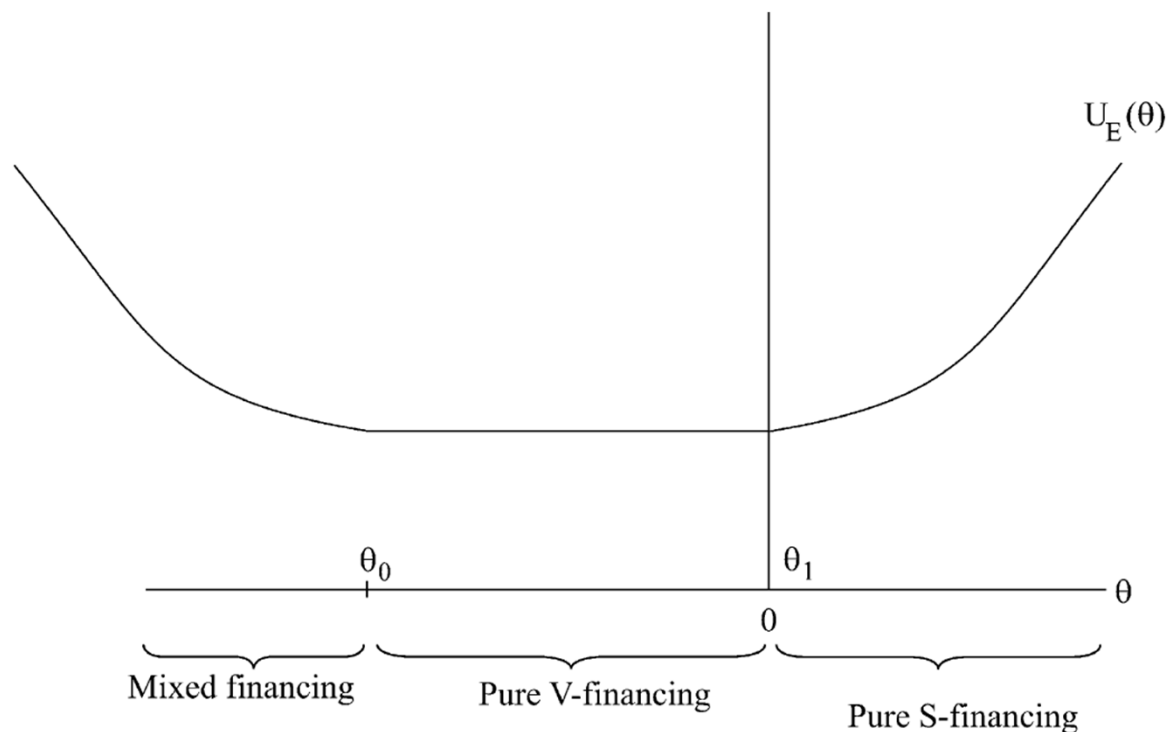
Model	12	13
Specification	FE	FE
Sample	Full	Investors
CVC investment		
CVC*Strategic	0.324* (0.141)	0.213* (0.089)
CVC*Financial	-0.552 (0.423)	-0.387 (0.394)

- Dushnitsky and Lenox (2005, 2006)
 - And many surveys/recent papers by the author(s)
- CVCs with a clear strategic focus (hand coded) are more likely to create value for parent firms
- Also identifies that firm's financial health and absorptive ability (Cohen and Levinthal, 1990)

Startup-side Problem: Hellmann (2002)

- Then the question is: why are startups willing to take CVC \$\$\$?
- Hellmann (2002) theoretically investigates the startup-incumbent relationship established using CVC

- When do CVC investments exist in equilibrium?



- When complementarity is high (most of the empirical studies)
- When substitutability is high but other VCs lead the investment

Mathews (2006): Accepting CVC To Deter Competition

- Mathews (2006) makes a sharp point that is relevant to the “common ownership” logic

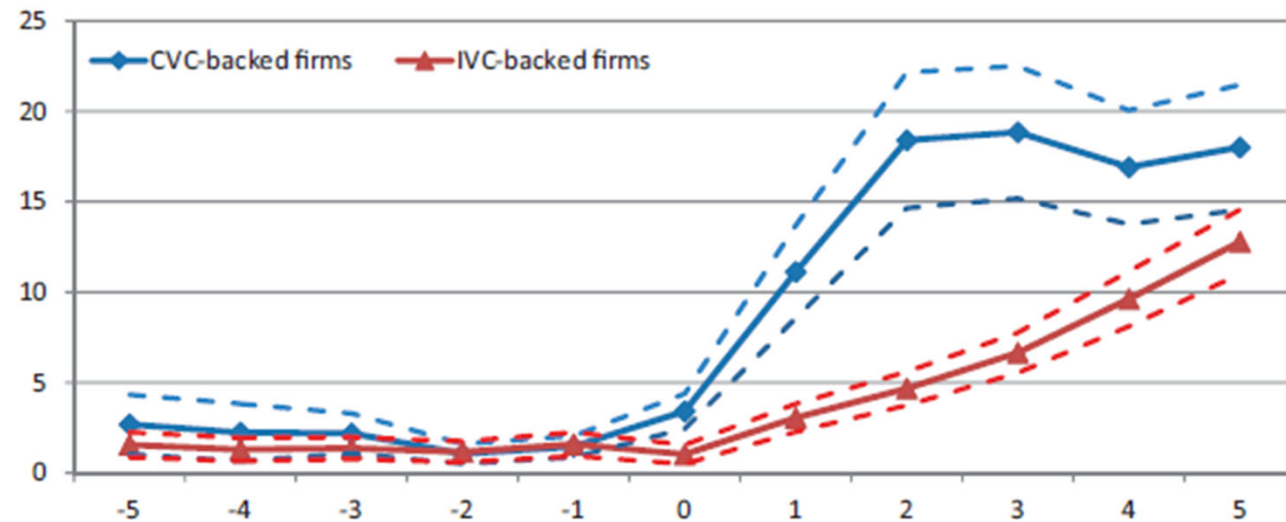
- The idea is



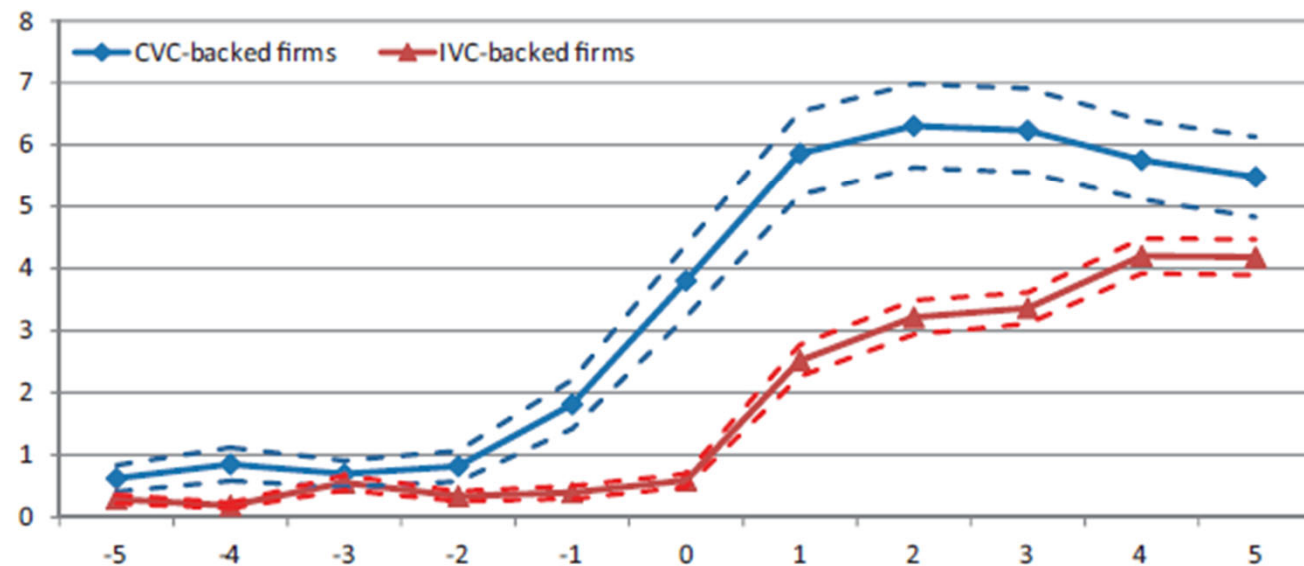
- when the startups innovation may replace the incumbents' existing product, allowing CVC investment (startups giving up some ownership) can deter incumbents entry
- Time to bring the ice-cream example back...
 - If C&C VC gets 10% of all Song's profit from selling the zero-calorie ice-cream, that lowers the incentives to enter

Impact on Startups: Chemmanur et al. (2014)

Panel A: Number of patents



Panel B: Citations per patent



- What is the impact of CVC investment on startups' own innovative productivity?
- Chemmanur et al. (2014) examines this problem by investigating
- They find that CVC-backed startups produce 27% more patents, which receives on average 17.6% more citations
- Potential channel: technological knowledge transfer and risk-tolerance

2.2 But Do Startups Fund Incumbents?

- This might be a very counter intuitive one
 - Indeed, startups are financially constrained while incumbents are often more resourceful
- But the answer is Yes...
 - Through **trade credit**
 - Startups provide goods, while incumbents **delay their payment**



Provides **goods** on $t=0$



Payment \$\$\$ on $t=60$



The Assumptions Leading to TC Arrangements

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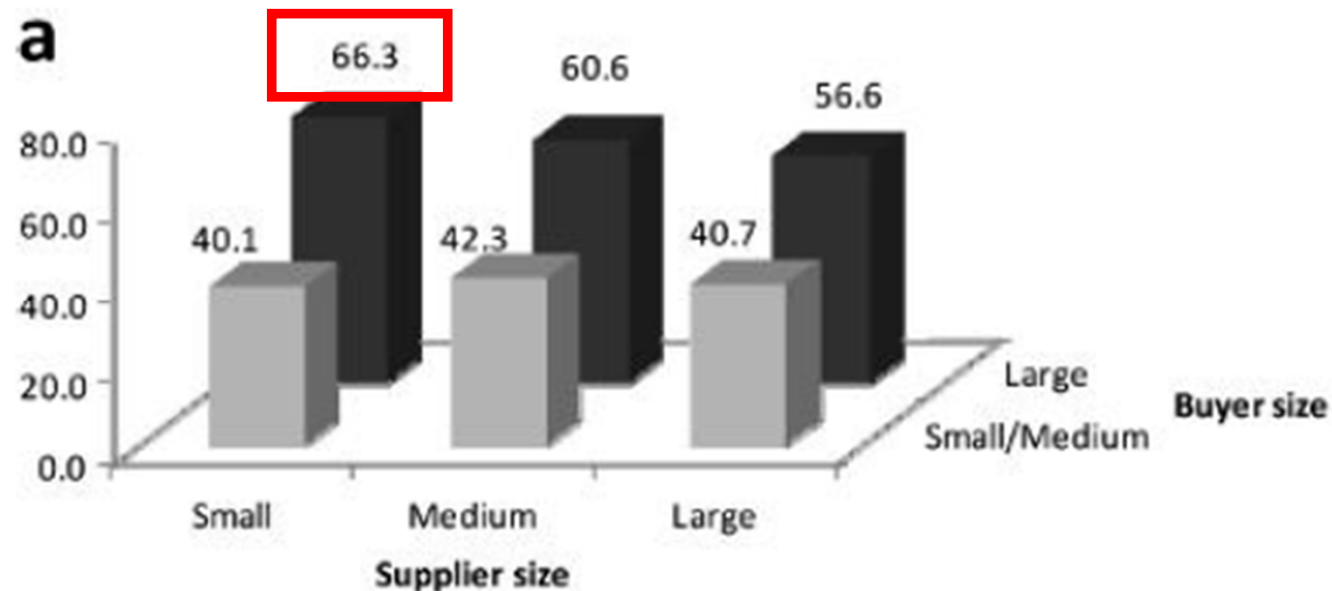
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Small Firms Fund Large Firms?

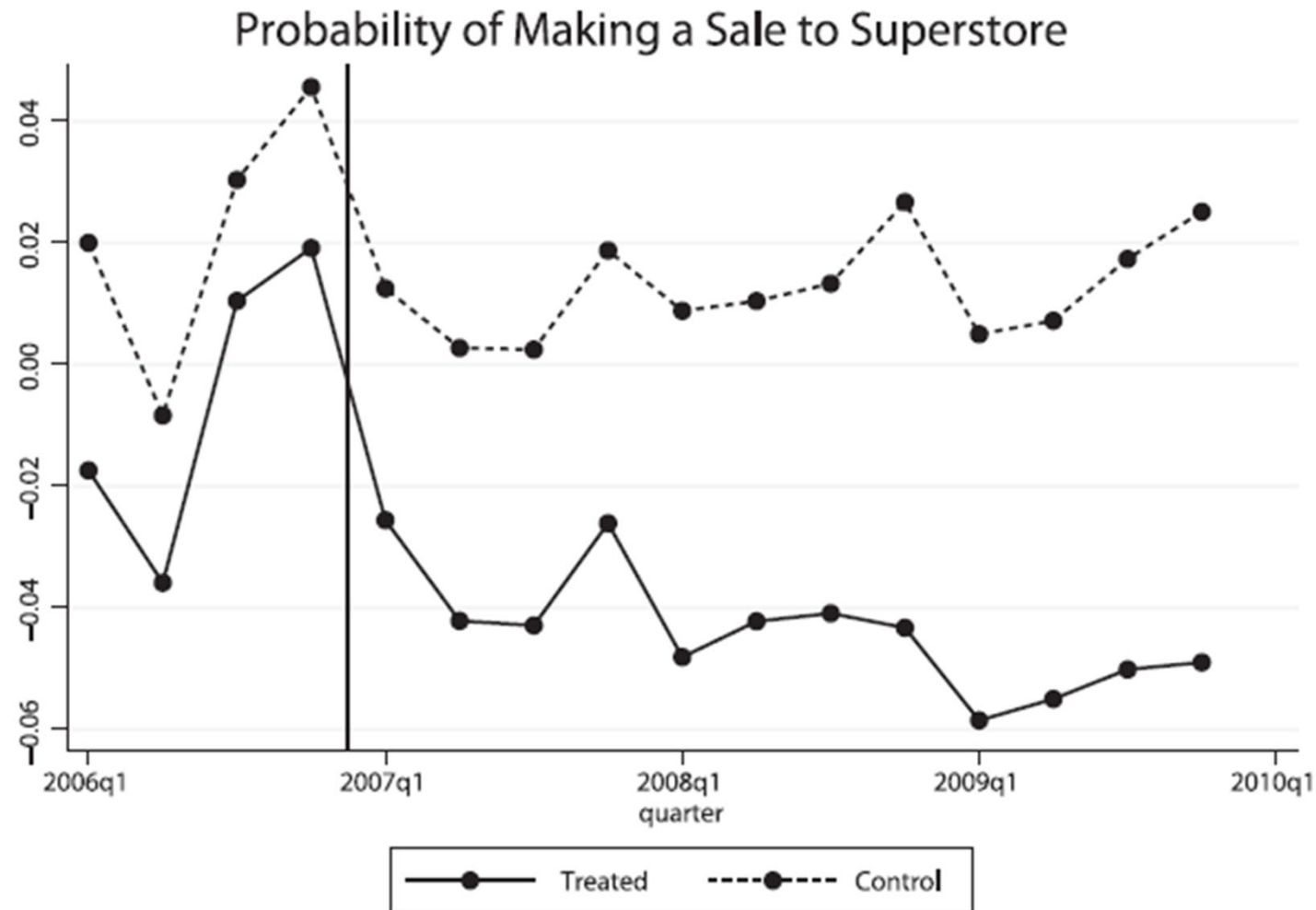
- Klapper, Laeven, and Rajan (2012)
- This is one of the first studies that can examine detailed trade credit contracts (30K, 56 buyers)
- They find that small/young suppliers provides trade credit to large buyers
- Why? Startups offer a “trial” period to resolve the uncertainty and lack of relation (**Assumption 3**)



Net days for suppliers and buyers of different size

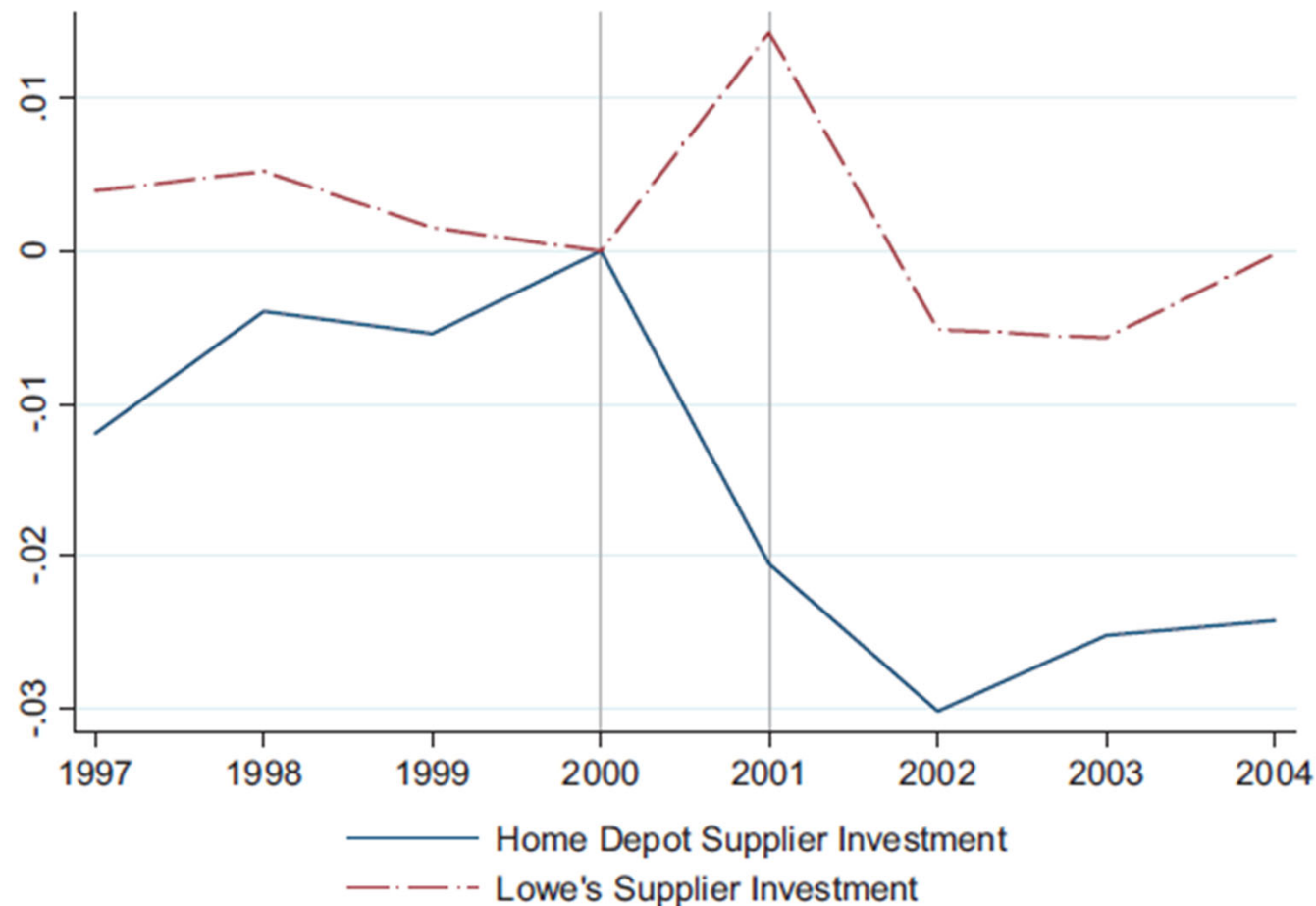
Source: Klapper, Laeven, and Rajan (2012, RFS)

Without Such Relation, Trades Are Less Likely...



- Breza and Lieberman (2017): Financing incumbents is necessary for startups to get business
- Breza and Lieberman (2017) uses a regulation changes in Chile that limits the types of trade credit contracts startup and incumbents can sign—hope to support the startup suppliers
- But—that decreases the trade likelihood by 11% (negative influence!)

(Negative) Consequences to Startup Suppliers



- Murfin and Njoroge (2015)
- Yet to be clear, startups financing incumbents have negative consequences
- Using a hand-collected panel of 1,063 supplier-buyer relationships, Murfin and Njoroge (2015) find that increasing the payment speed helps small suppliers to make bigger investment
- Barrot and Nanda (2020) show a similar result for labor effect.

3. Labor

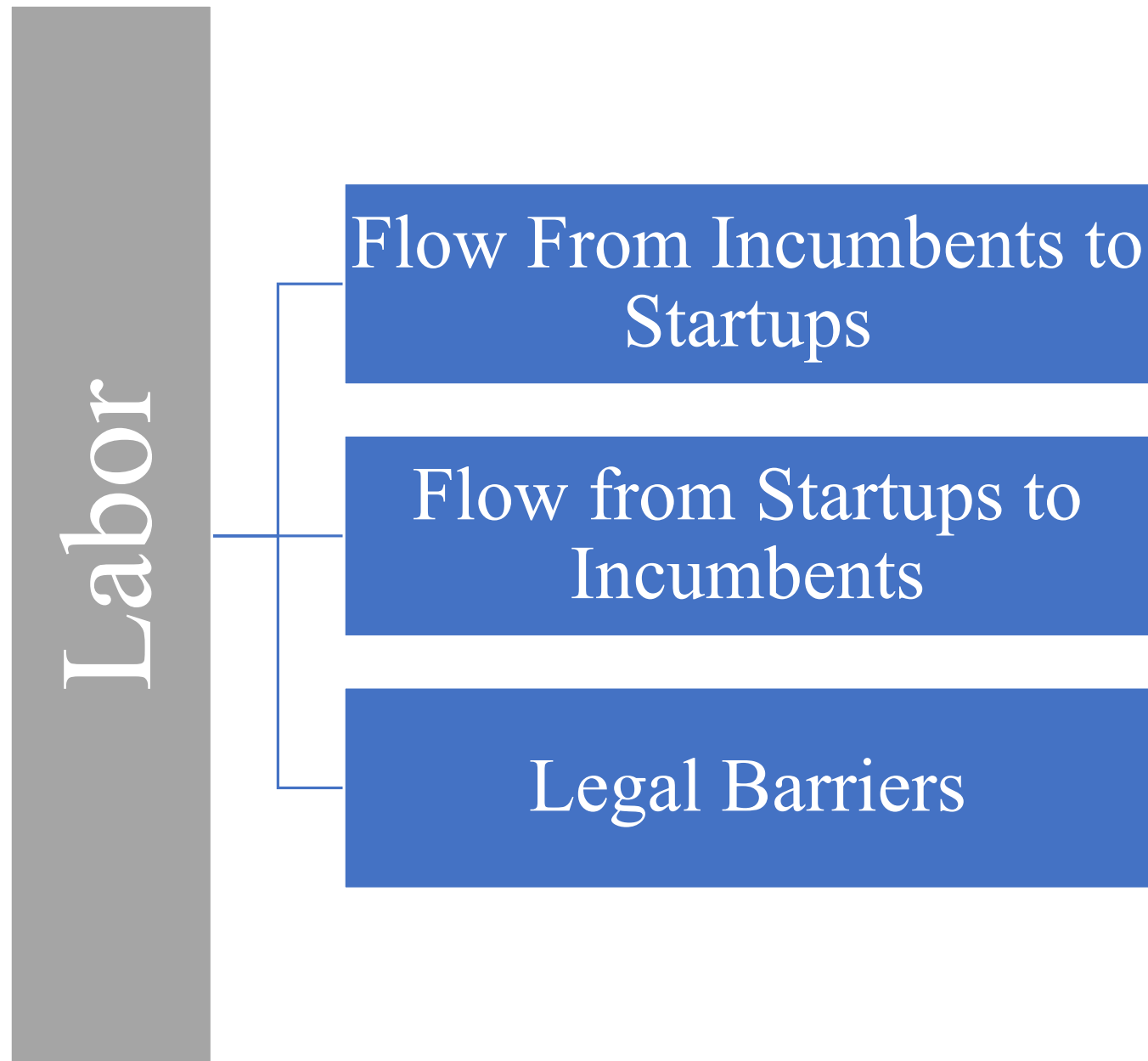
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Interactions on the Labor Market



- The choice of workers (potential entrepreneurs) results from trading off between
 - The benefit from working for a creative startup (pecuniary and non-pecuniary)
 - The risks and uncertainty associated with starting up

Competing on the Wage Dimension

- This is an unsettled issue—new data/facts/approaches are emerging.
- Brown and Medoff (2003)
 - Startup wage discount
- Kim (2018) and Babina et al. (2020)
 - Startup wage premium

Variable	(1)	(2)	(3)	(4)
Union contract	-.014 (.058)	-.007 (.058)	.053 (.051)	.057 (.051)
ln (site employment)	.049 (.011)	.050 (.011)	.035 (.010)	.037 (.009)
ln (firm employment)	.012 (.008)	.015 (.008)	.009 (.007)	.013 (.007)
Age of business/10	.022 (.006)		-.001 (.005)	
ln (age of business)		.042 (.019)		-.035 (.016)
Weighted SD of industry effects	.193	.196	.125	.126
Worker characteristics	No	No	Yes	Yes

Omitted: Established Firm	Dependent Variable: Log Salary of Accepted Offer				
	All (1)	All (2)	All (3)	All (4)	All (5)
VC-Backed Startup	0.130*** (0.0261)	0.110*** (0.0259)	0.0935*** (0.0249)	0.0791*** (0.0258)	0.0693*** (0.0235)
Non-VC Startup	-0.0723 (0.0557)	-0.0833 (0.0550)	-0.0931* (0.0498)	-0.0642 (0.0512)	-0.0250 (0.0537)
Male		0.122*** (0.0170)	0.123*** (0.0166)	0.114*** (0.0163)	0.0919*** (0.0152)
US Citizen		-0.0696*** (0.0227)	-0.0665*** (0.0220)	-0.0585*** (0.0222)	-0.0685*** (0.0198)
Number of offers received			0.0552*** (0.00603)	0.0555*** (0.00604)	0.0464*** (0.00554)
Constant	10.96*** (0.0209)	11.02*** (0.0291)	10.96*** (0.0296)	10.76*** (0.105)	10.75*** (0.106)
Location (State) Fixed Effects	No	No	No	No	Yes
MIT School Fixed Effects	No	No	No	Yes	Yes
Observations	2064	2064	2064	2052	2024

Incumbent to Startups: Spinoffs, or Spin-outs, or Spawning

- The most well-studied labor interactions between startups and incumbents
- The idea is that:



- The key questions
 - What motivates people to leave incumbents to found or join a startup?
 - Are their experiences in incumbent firms helpful?
 - Does that hurt the incumbent firms?

Why Entrepreneurs Leave Incumbents to Startup?

- Gompers, Lerner and Scharfstein (2005)
 - Use VentureOne and exploit the work history prior to entrepreneurship (1986-1999)
 - roughly **40%** of in-sample startups are founded by someone who left public firm jobs
- Two potential views:
 - **Learning and forming networks**—lower entrepreneurial entry barrier/cost
 - **Large incumbents are unlikely to fund their ideas**—lower potential upside of staying (could be large firms incapable of evaluating/responding, or optimally focusing)
- Findings and interpretations
 - Public firms in SV and MA spawn more, especially if they were once VC backed
 - Tightly-run undiversified companies spawn more startups

Does Incumbent Experience Help?

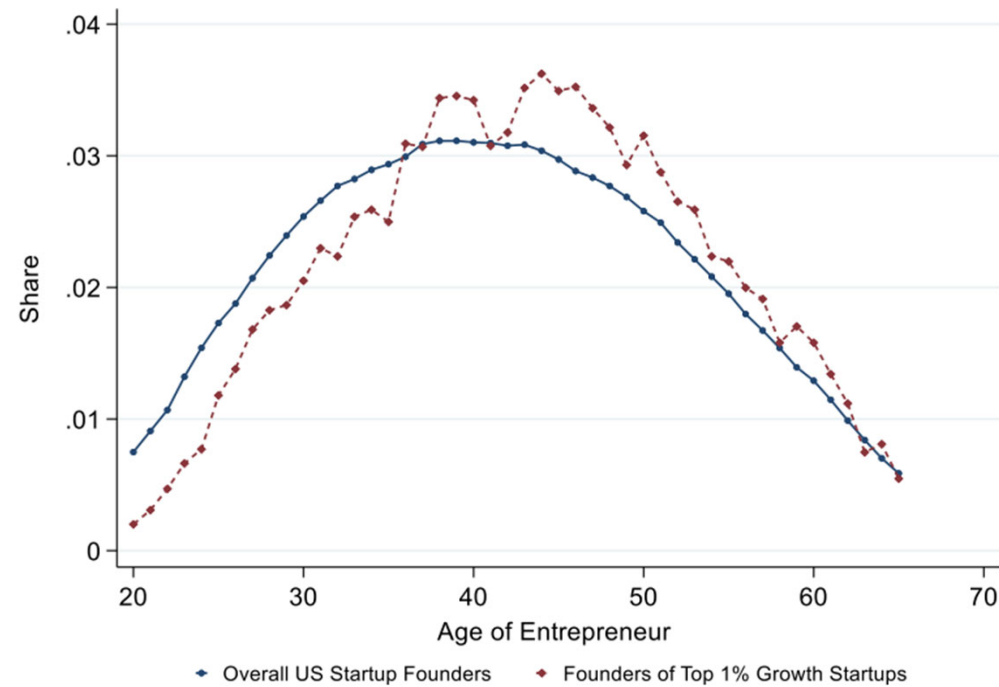
Variable	(1)	(2)	(3)
Spawn	−0.967*** (0.255)	−0.689** (0.267)	−0.563* (0.312)
Serial	−1.08*** (0.282)	−0.740** (0.289)	−0.522* (0.302)
Constant	6.027 (0.146)	6.31 (0.000)	6.426 (0.587)
Year effects	N	Y	Y
Segment effects	N	N	Y
N	174	174	174
R squared	0.102	0.228	0.307

Table 7. Hazard model-time to product approval

Variable	(1)	(2)
Spawn-unrelated	−0.069 (0.315)	−0.242 (0.322)
Spawn-related	0.888*** (0.291)	0.512** (0.299)
Serial	0.172 (0.302)	−0.041 (0.322)
Segment effects	N	Y
R-squared	0.02	0.69
Observations	191	191

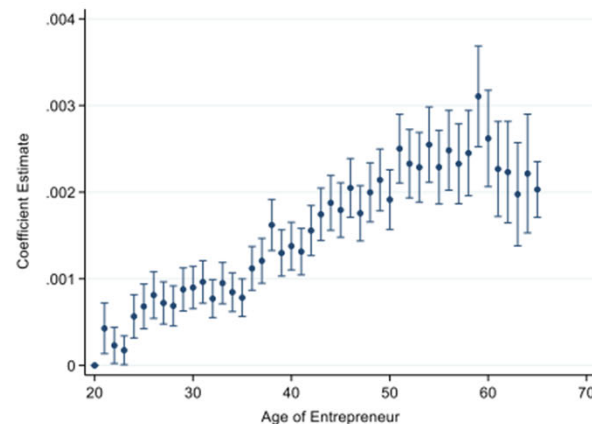
- Chatterji (2009): Yes
- Medical device industry startups
- Spawned startups perform better: raise VC faster and produce more and better innovation
- However, the knowledge/experience that are the most useful are not innovation-related: it is market and regulation know-how.

Golden Age of Entrepreneurship

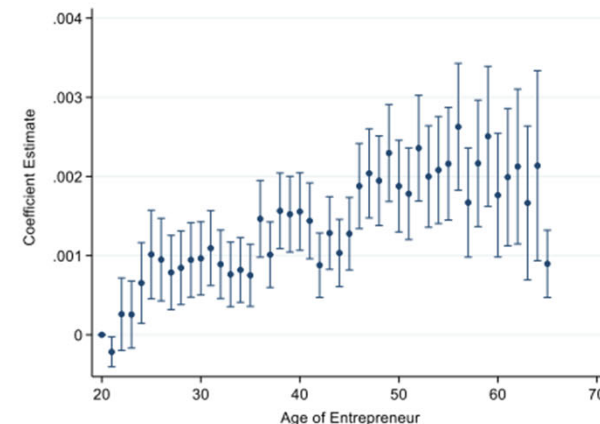


- Azoulay, Jones, Kim, and Miranda (2020)
 - The mean age at founding for the 1-in-1,000 fastest growing new ventures is 45.0.
 - Prior experience in the specific industry predicts much greater rates of entrepreneurial success.

Fig. 2A: Probability of Successful Exit (IPO or acquisition), by Age



2B: Probability of Top 0.1% Employment at 5 Years, by Age



- This means that the entrepreneurial preparation in incumbent firms are very important for entrepreneurial growth

Return to Incumbents



- **Involuntary** returns: Kim (2020) uses US Census data to explore “acqui-hires”
 - Acqui-hires often do not work in harnessing talents as the mismatch leads to high turnover
- **Voluntary** returns: flight to safety—when the risks and uncertainty of staying in entrepreneurship become too high, workers are more willing to return to incumbents
 - Bernstein, Townsend, and Xu (2020) workers are search more incumbent jobs (less startup jobs) during the COVID Pandemic!



4. Physical Capital—The Nascent Area

Startups:

A1. Startups are more **financially constrained** than incumbents

A2. Startups are more likely to produce **disruptive innovation**

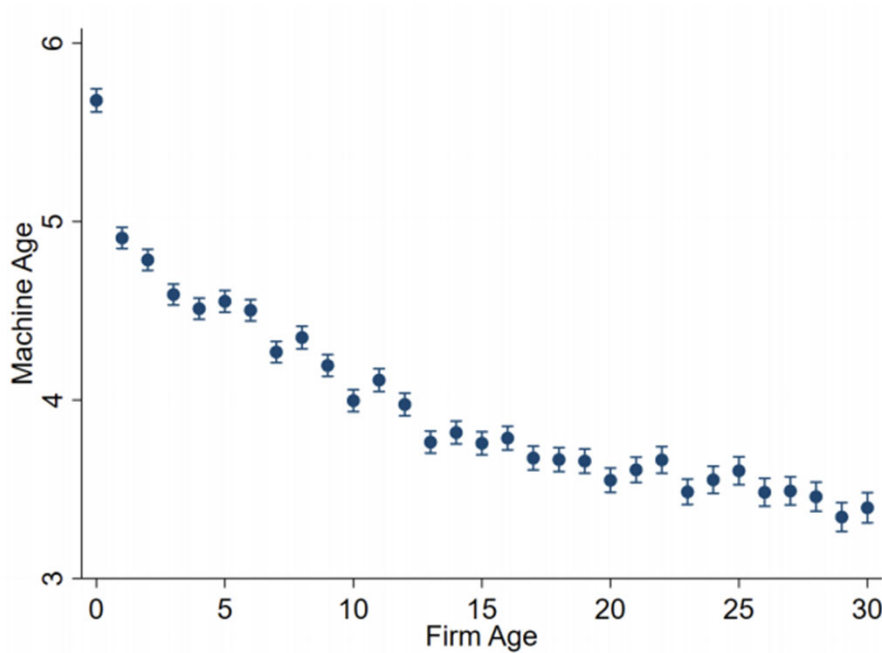
A3. Startups are more **experimental and uncertain**

Incumbents:

A4. Incumbents already own (to some extent to) **market power**

A5. Incumbents have **more resources** (marketing, knowledge, reputation)

“Young Firms, Old Capital”



- Ma, Murfin, and Pratt (2020)
 - Using UCC data in the US, identify a capital reallocation relation between startups and incumbents—young firms buy used capital from incumbents due to financial constraints (A1)
 - Startups benefit from the availability of incumbents’ used capital
 - Incumbents benefit from startups facilitating their own capital upgrades/turnover

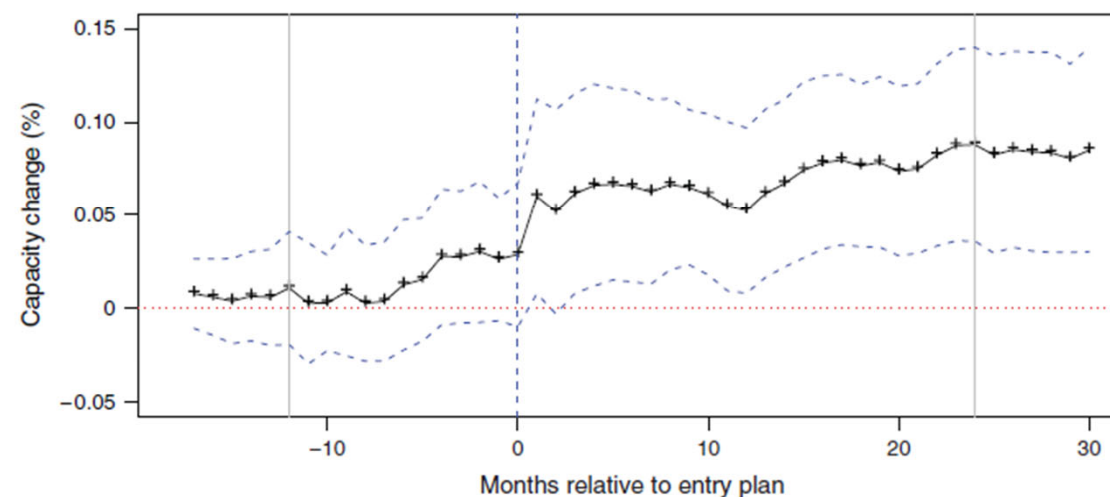


Physical Capital Investment as Entry Deterrence

– Cookson (2018)

- Add the incentives to protect market power
- Using new data on entry plans into the American casino industry
- Incumbent firms invest in physical capacity to deter eventual entry of new competitors

Figure 3. (Color online) The Timeline of Incumbent Capacity Expansion During the Planning Stage of a Nearby Rival (Months –18 to +30 Relative to the Entry Plan)



Thoughts on Future Research

Three Potential Venues to Push This Forward

The Depth

- Additional frictions that affect such interactions
 - Regulation
 - Geographic barrier and agglomeration
 - Redeployment of assets over incumbents' failures

The Links

- Most of the decisions are considered independently, how can we make sense of them in a comprehensive framework
 - For example, CVC vs. acquisitions vs. alliances
 - For example, how can firms manage talents with labor mobility between startups and incumbents

The Trend

- If most of the patterns are driven by the set of assumptions
 - On financial, resources, innovation, market power...
- The interactions would change when those assumptions change
 - Easier financing for startup
 - More market concentration
 - Lowering experimentation cost
- If the interaction patterns change, how would that affect growth and business dynamism?

Thank You Very Much!