

# THE BEST OF TIMES OR THE WORST OF TIMES?: THE EVOLVING WORLD OF VENTURE CAPITAL

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# The good news

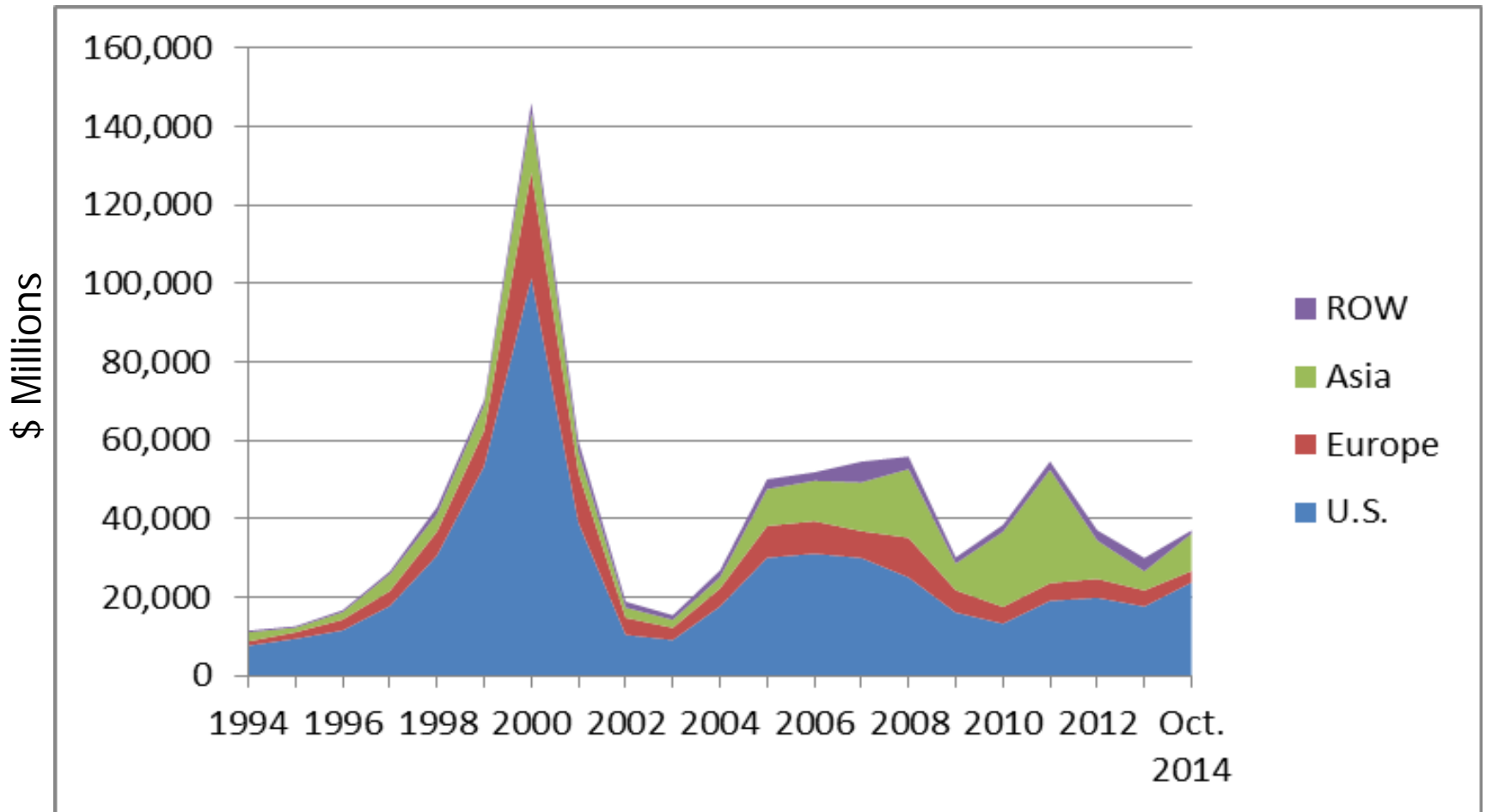
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- Long drought seems to be over.
  - ▣ Venture capital offers attractive returns again.
- But there are a few catches!



# Venture capital fundraising

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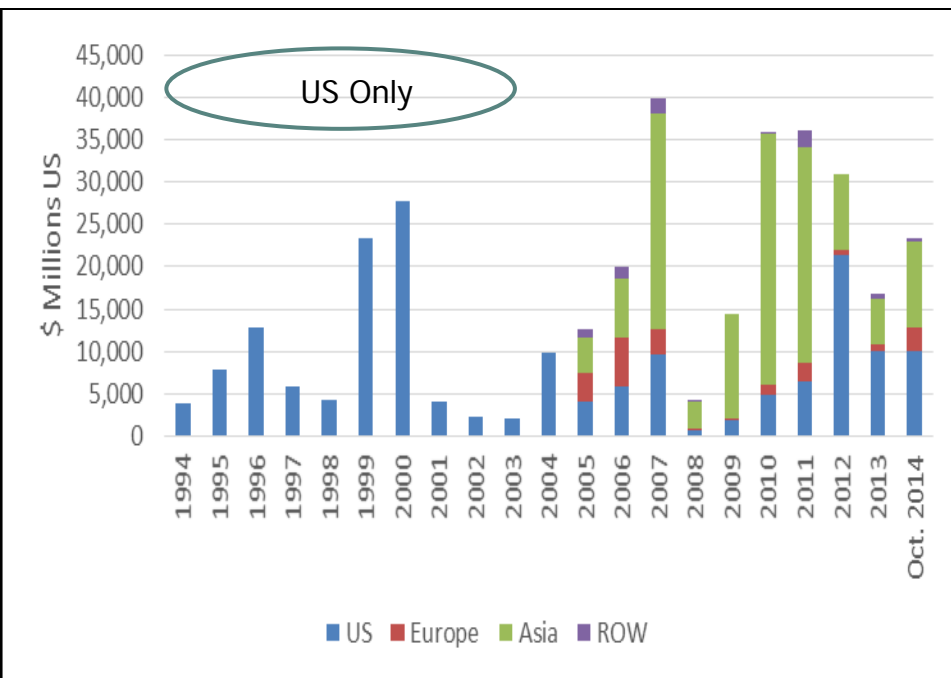
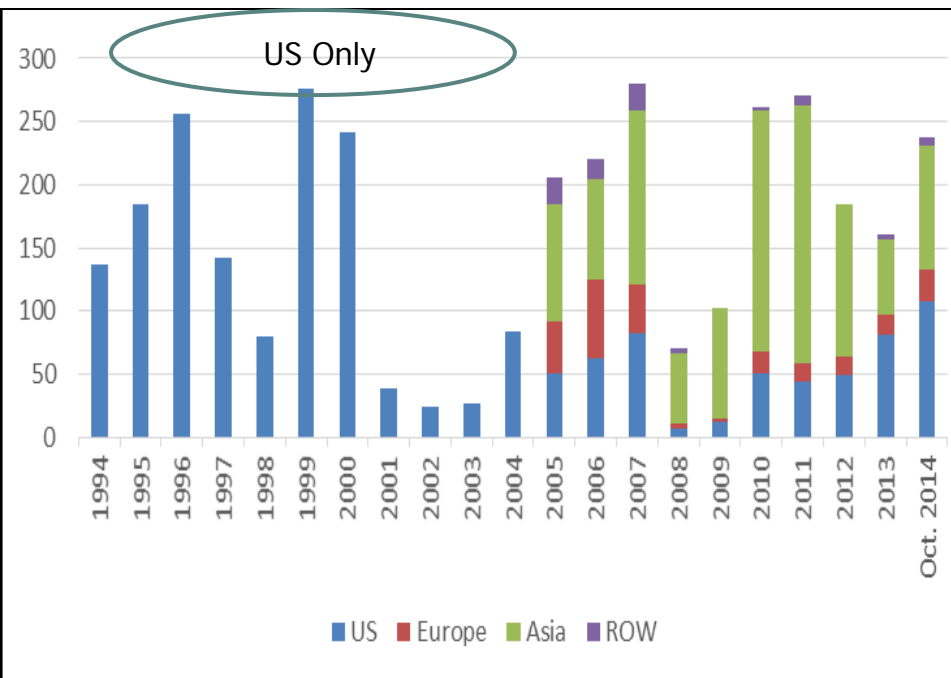
Source: Thomson Reuters accessed October 7, 2014

# Venture capital-backed IPOs

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## Number of IPOs

## \$Millions raised in IPOs

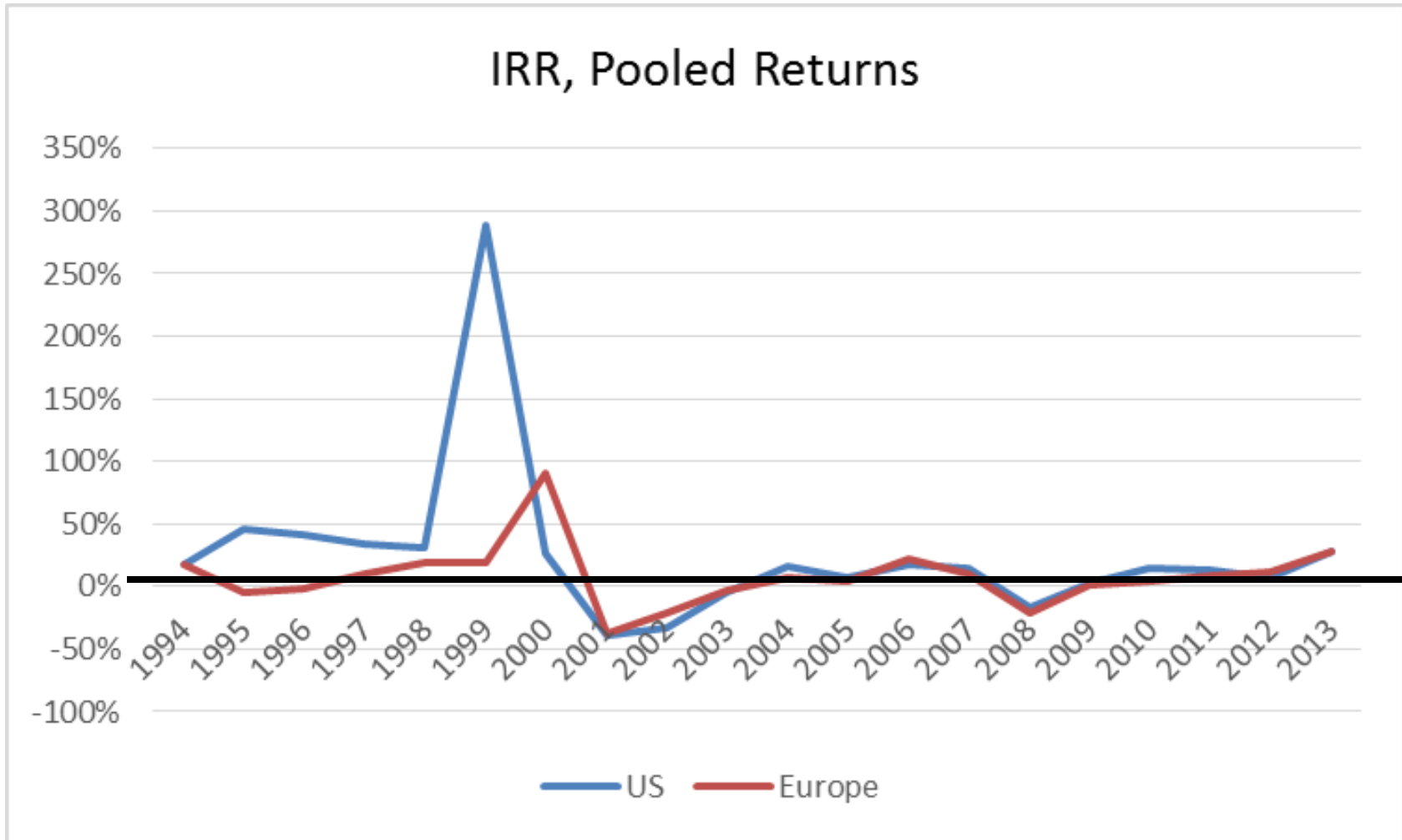


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Source: Thomson Reuters accessed October 7, 2014

# Venture capital returns: IRRs

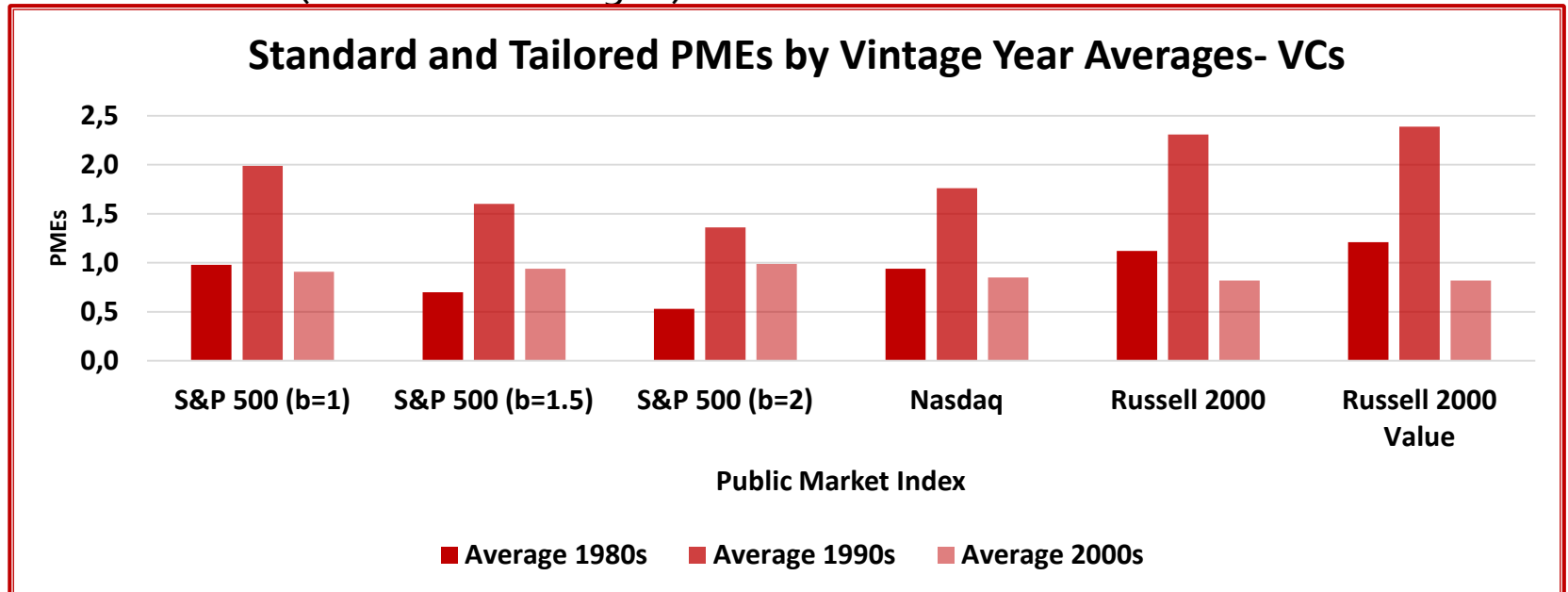
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Source: VentureXpert, accessed October 7, 2014

# Venture capital returns: PME

- For VC funds, sample average performance of VC funds is greater than 1.0, but sample *median* is less than 1.0.
- VC funds outperformed in 1990s and underperformed in 2000s, irrespective of relevant index (or beta for S&P 500).



Note: Based on VCs with vintage years 1984-2008. The authors use multiples of the S&P 500 to approximate the effect of betas of 1.5 and 2.

Source: Harris et al., July 2013, p. 36.

# But large lurking questions

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- Constancy of geographic patterns?
- Stability of existing firm pecking order?
- Impact of shifts in LP preferences?

# 1. Will geography change?

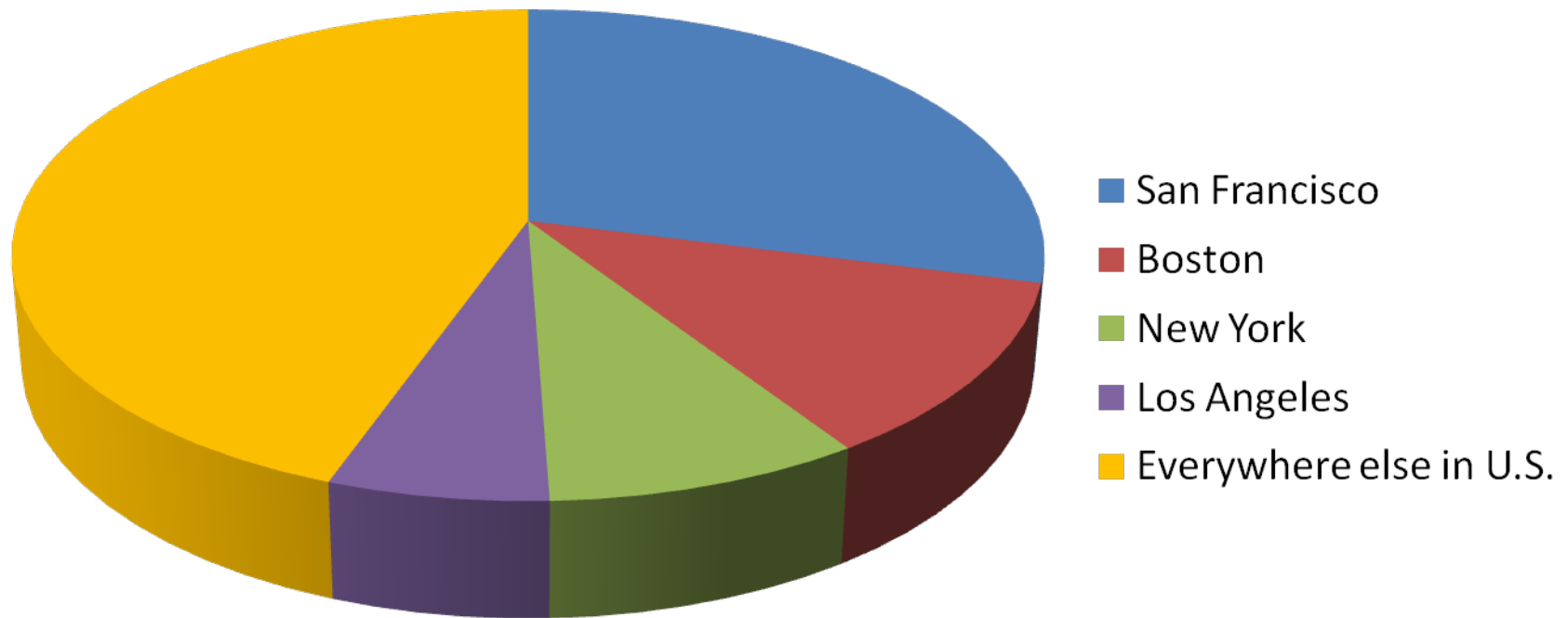
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- Traditionally, venture capital concentration.
- Many reasons to think that barriers to distance are changing?
- What does this imply for strategy?



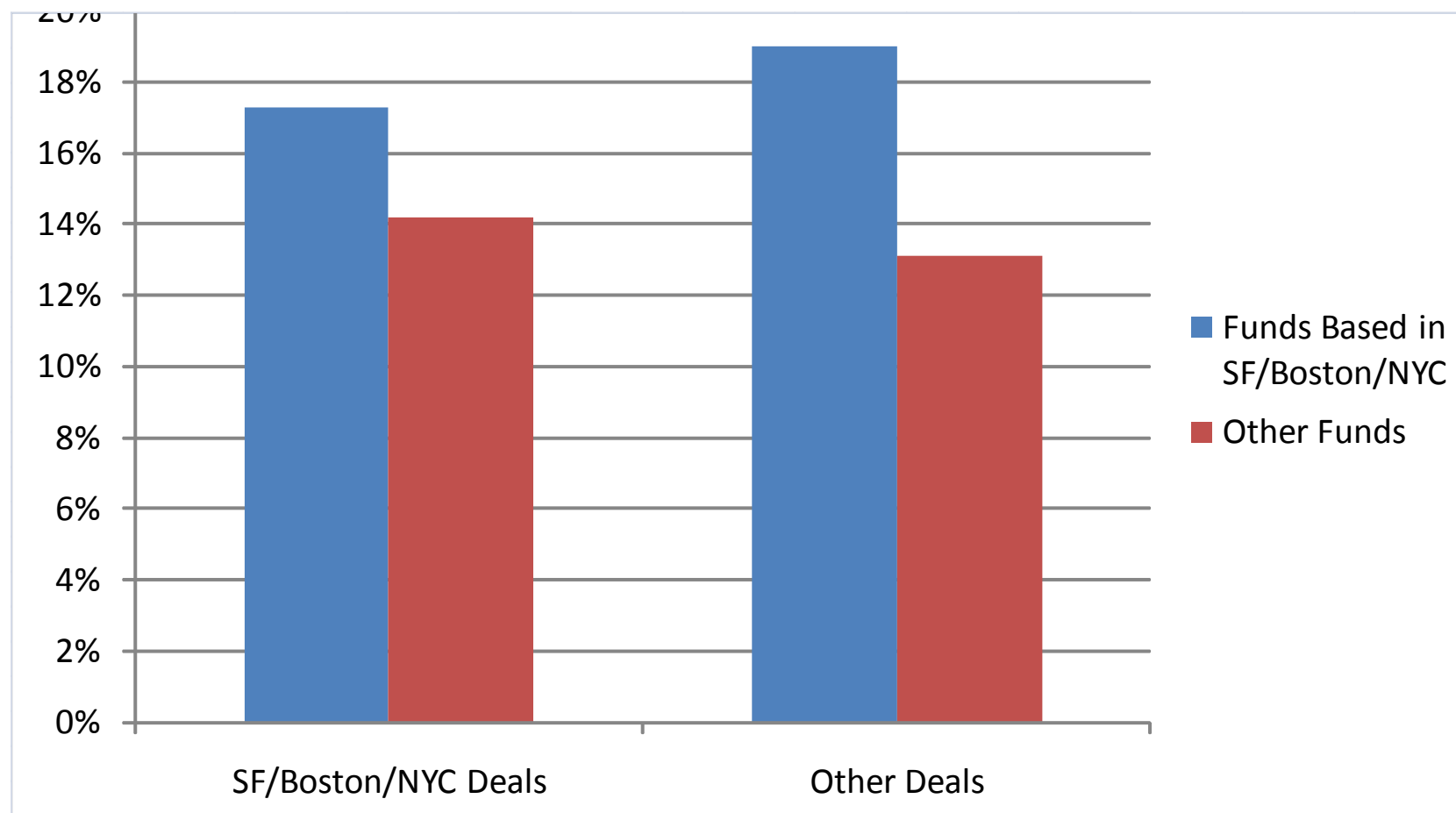
# The historical case for focus: Evidence from the U.S.

9



# IPO rate for U.S. VCs

10



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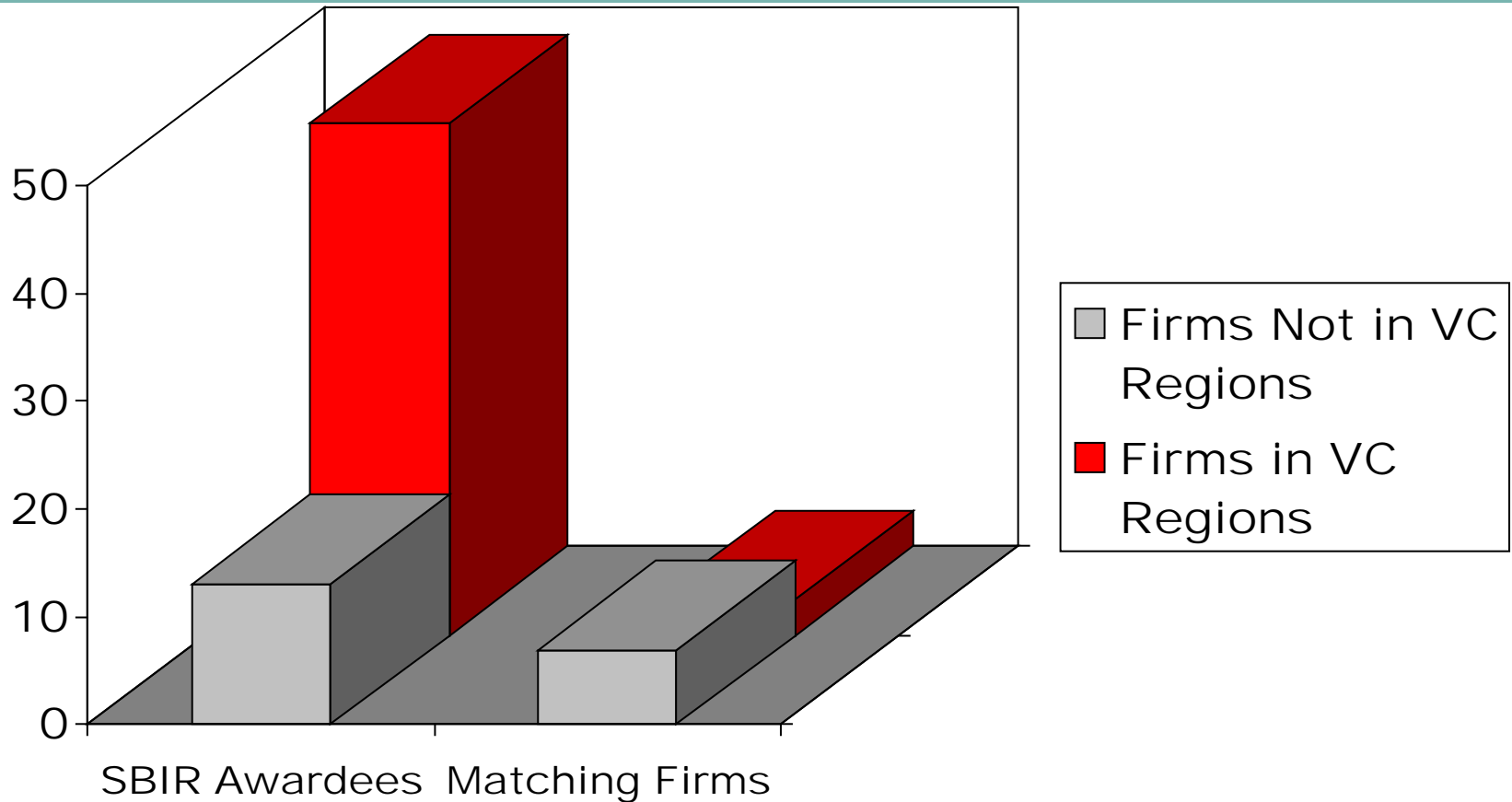
# The U.S. case (continued)

11

- And not just due to lack of funds:
  - Small Business Innovation Research program established in 1982 to make small awards to high-tech firms.
  - Supposed to be on merit, but many pressures to make awards everywhere.
  - Compared growth of awardees in 10 years after award with matching firms.
    - Lerner [1999].

# Change in employment

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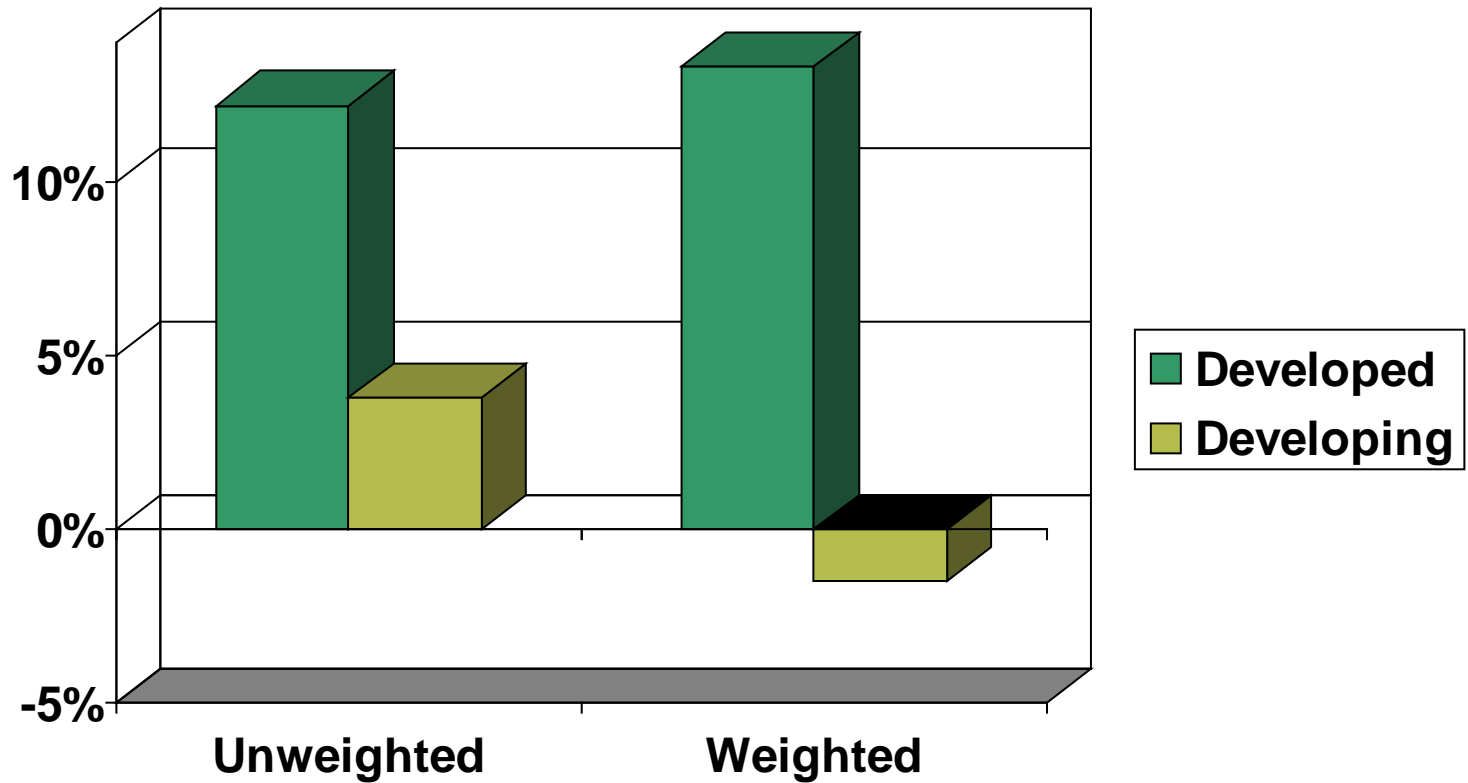
# And true globally as well...

13

- Look at net IRR by venture and growth equity funds in developed and developing world:
  - ▣ Define developing as everything outside U.S., Canada, Western Europe, Japan, Australia and New Zealand.
  - ▣ Base classification on which nation had most private equity investment from fund, not stated goal.
    - Obtain investment data from SDC/VentureXpert.

# Average IRRs

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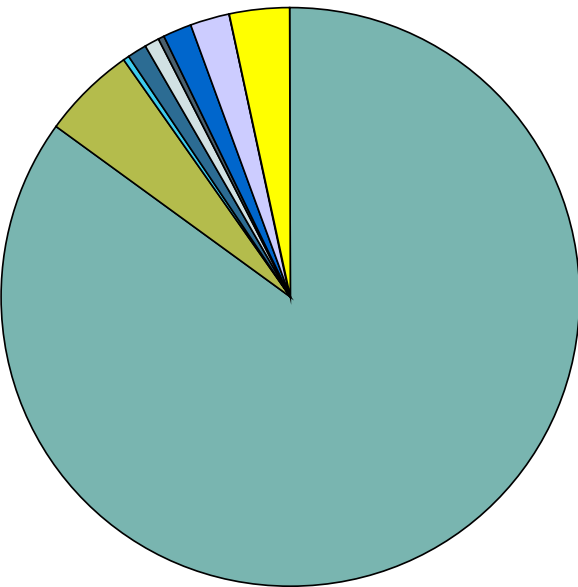
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Source: Author's calculations.

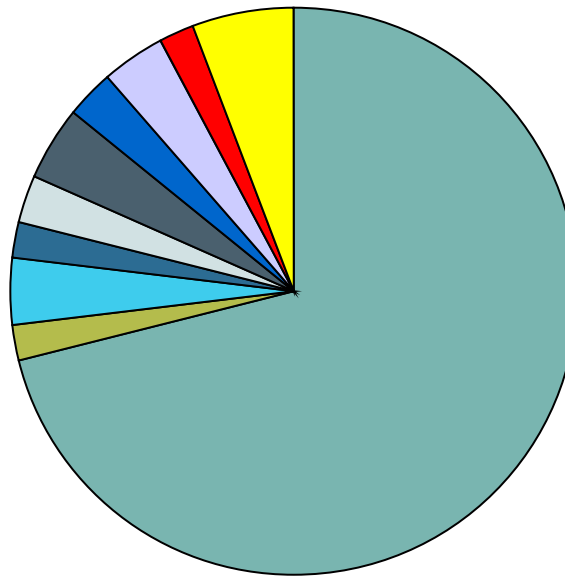
# But changes underway: Geographic distribution of venture capital

15

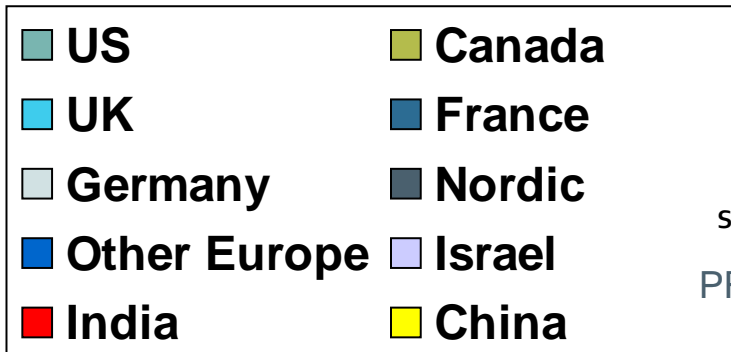
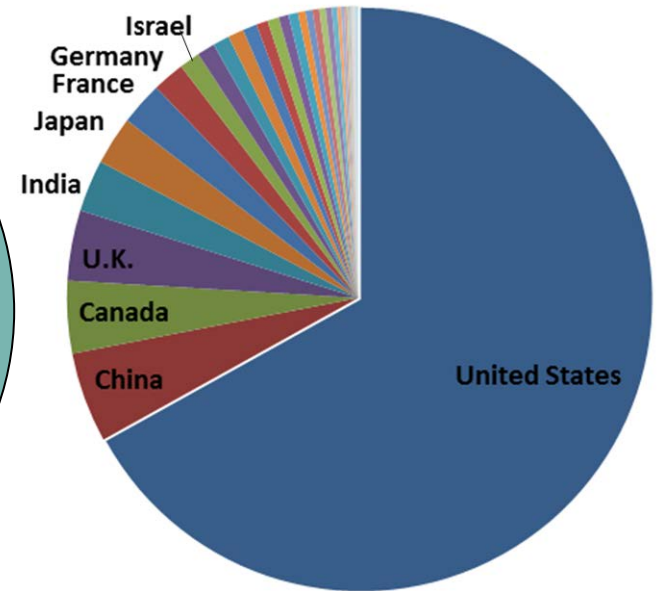
1996



2007



2013



Source: Author's analysis.

Source: ThomsonReuters VentureXpert. Data as of 12/31/13.

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# Contrasting views

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- Elite cities are constant:
  - ▣ Strength of historical patterns.
  - ▣ Stickiness of venture relationships.
  - ▣ Abilities of major groups to “scale.”
- Alternative view:
  - ▣ Potential for a fundamental change in geography of innovation.
  - ▣ Limitations to scaling of venture model.



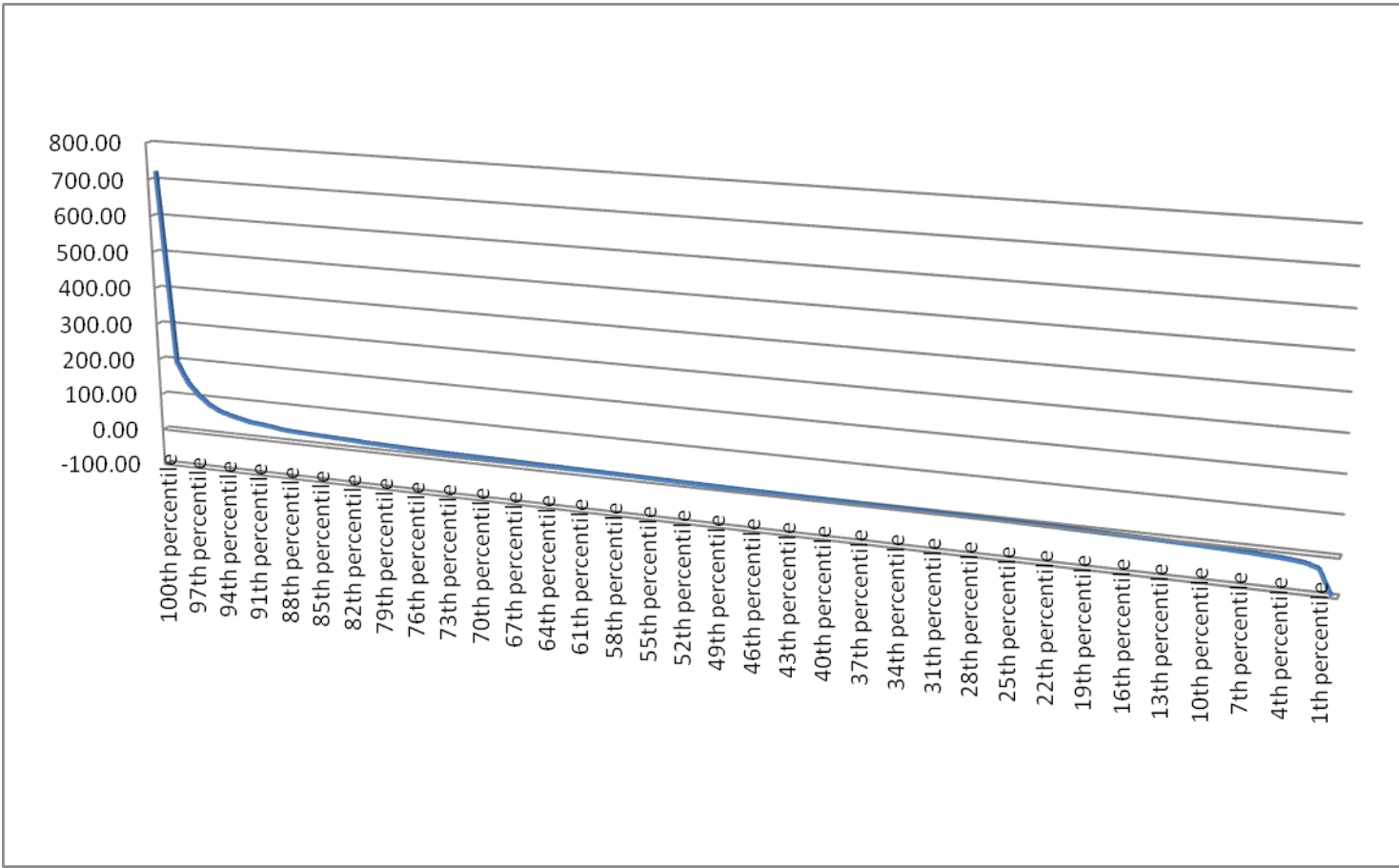
## 2. Will established order continue to hold?

17

- Venture industry has been remarkably constant.
- Persistence in performance.
- But established order coming under stress today.

# Returns of U.S. venture funds

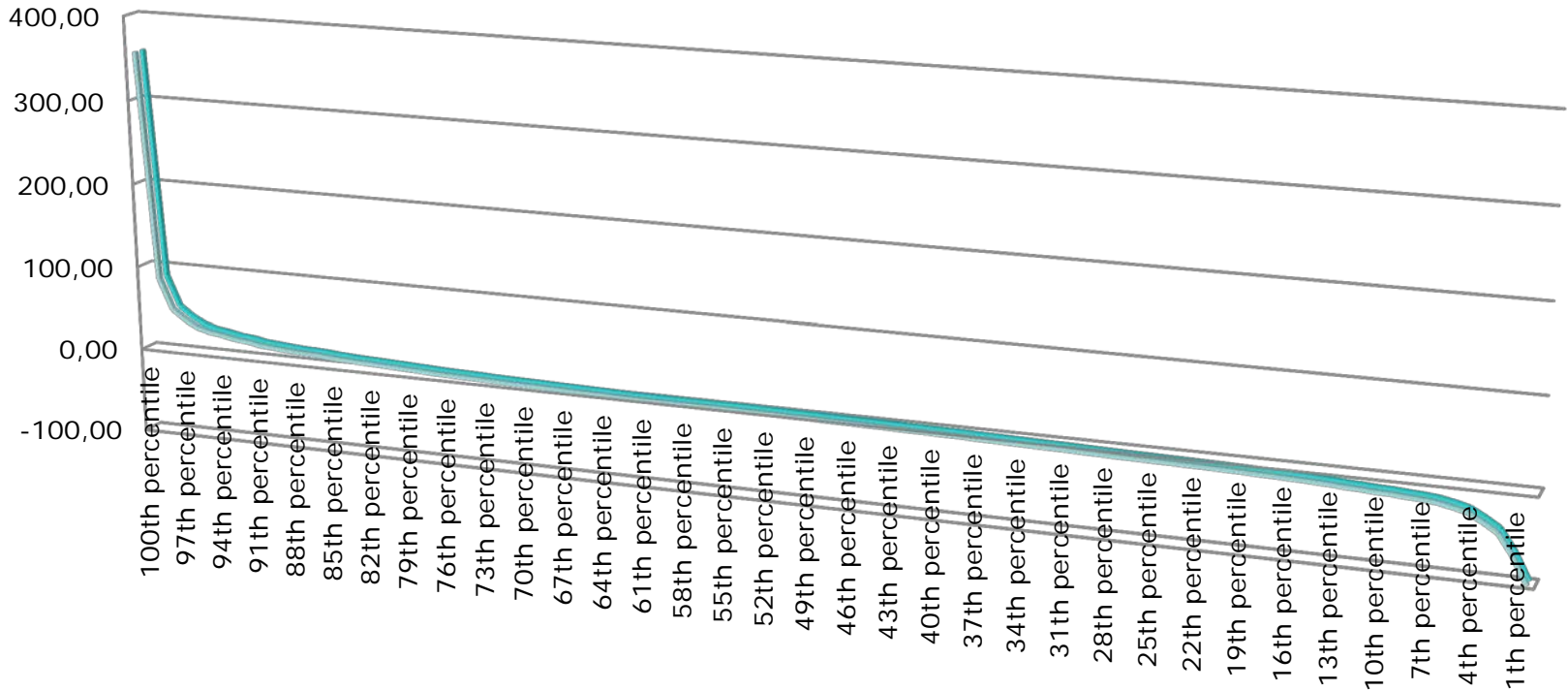
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Source: Venture Economics. PROPRIETARY AND CONFIDENTIAL

# Returns of European venture funds

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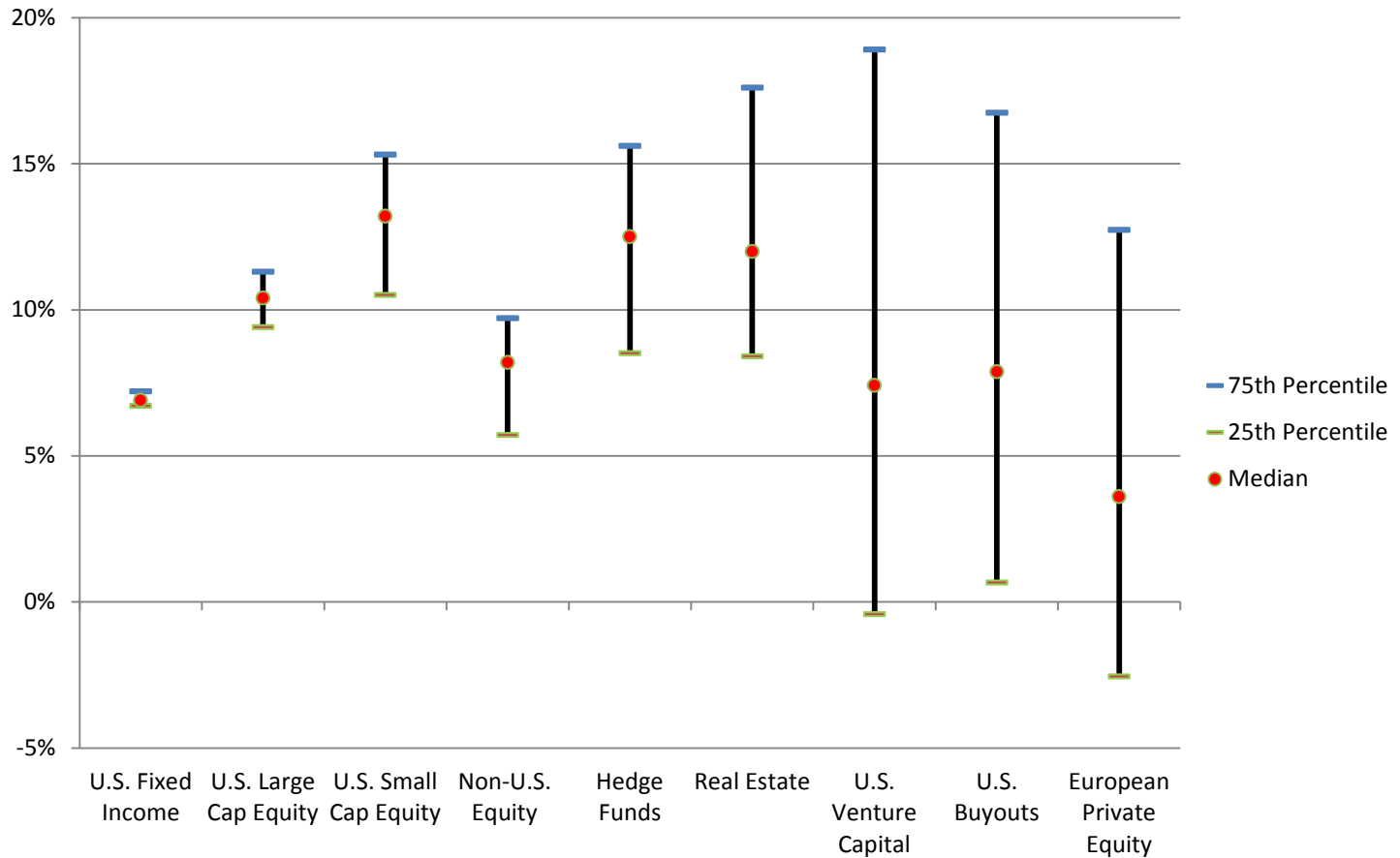


.Source: Venture Economics

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# Inter-quartile ranges and medians for asset classes

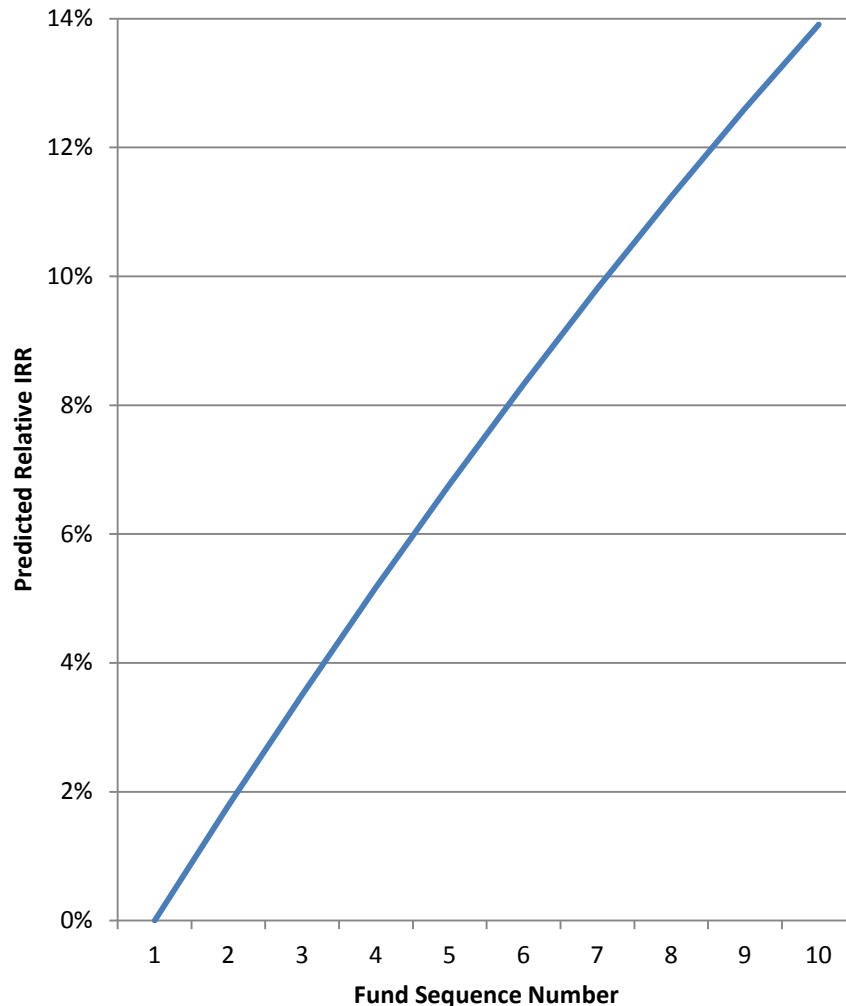
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Source: Yale [2011] and Venture Economics

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# Fund sequence number

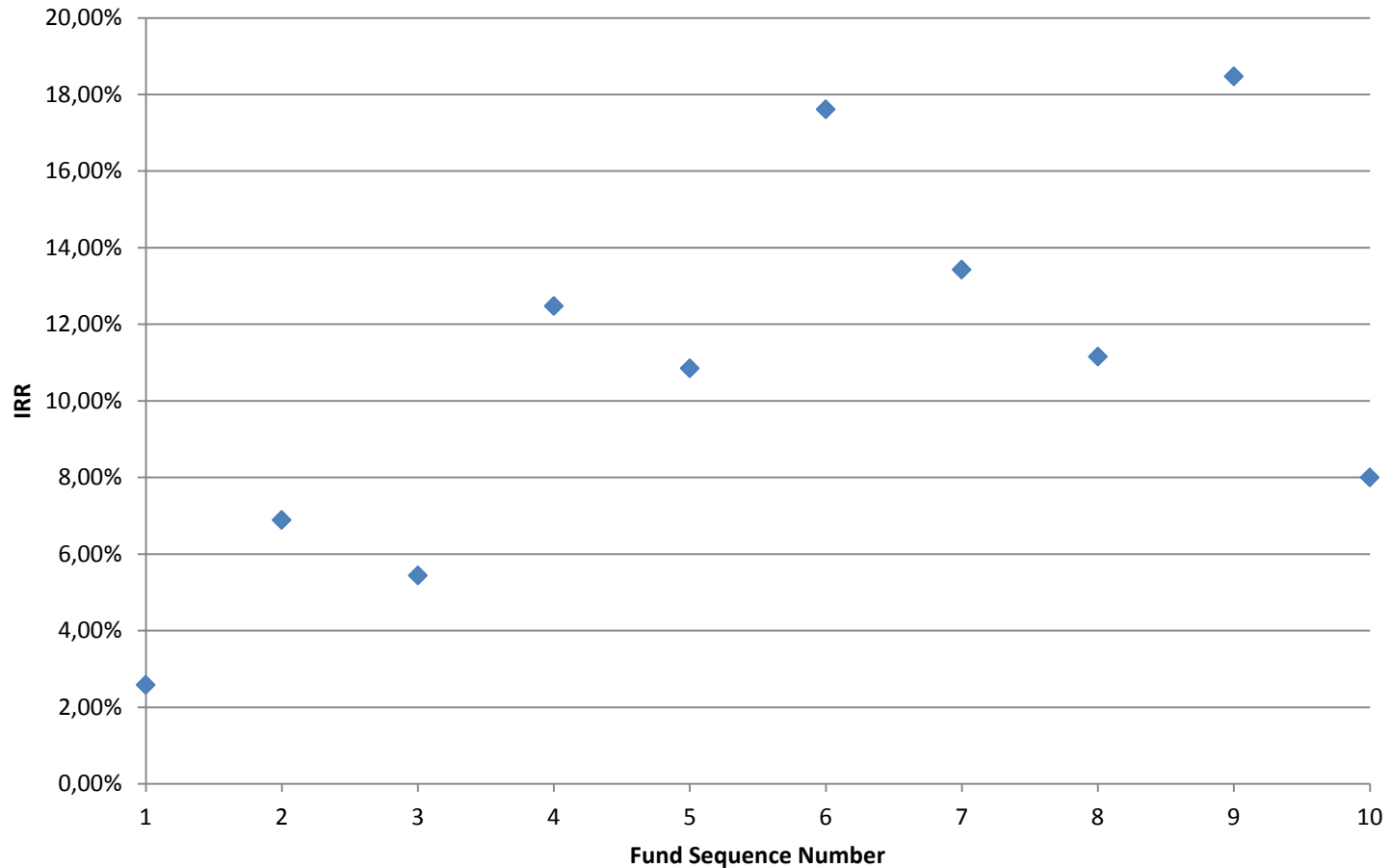


Final category includes 10th and higher funds,

- Positive relationship between IRR and fund sequence number.
- First time funds perform especially poorly.
- Regression results control for vintage year effect, fund category and fund size.

# One caveat

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# Persistence of performance

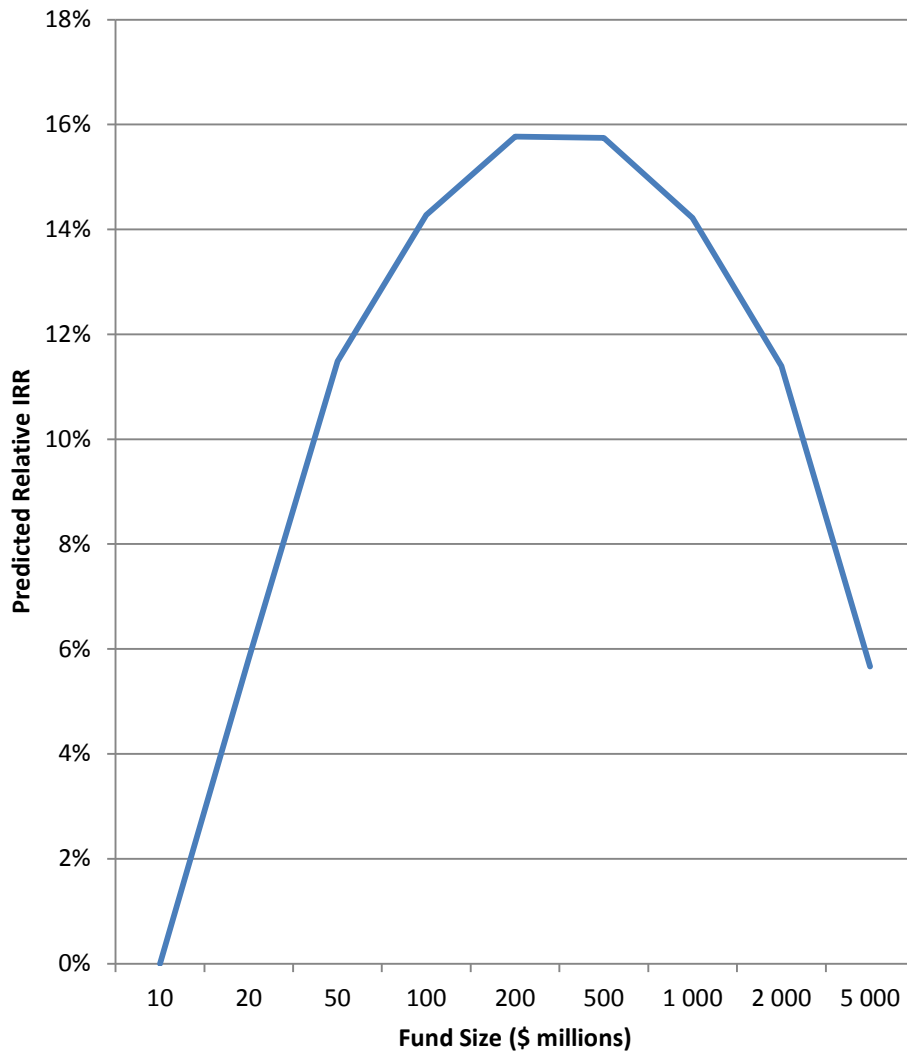
23

	Bottom	Medium	Top
Bottom Tercile	61%	22%	17%
Medium Tercile	25%	45%	30%
Top Tercile	27%	24%	48%

Source: Kaplan and Schoar [2005]

- High likelihood that the next funds of a given partnership stays in the same performance bracket → Persistence.
- 1% boost in past performance → 0.77% boost in next fund's performance.

# But limiting factor: Fund size

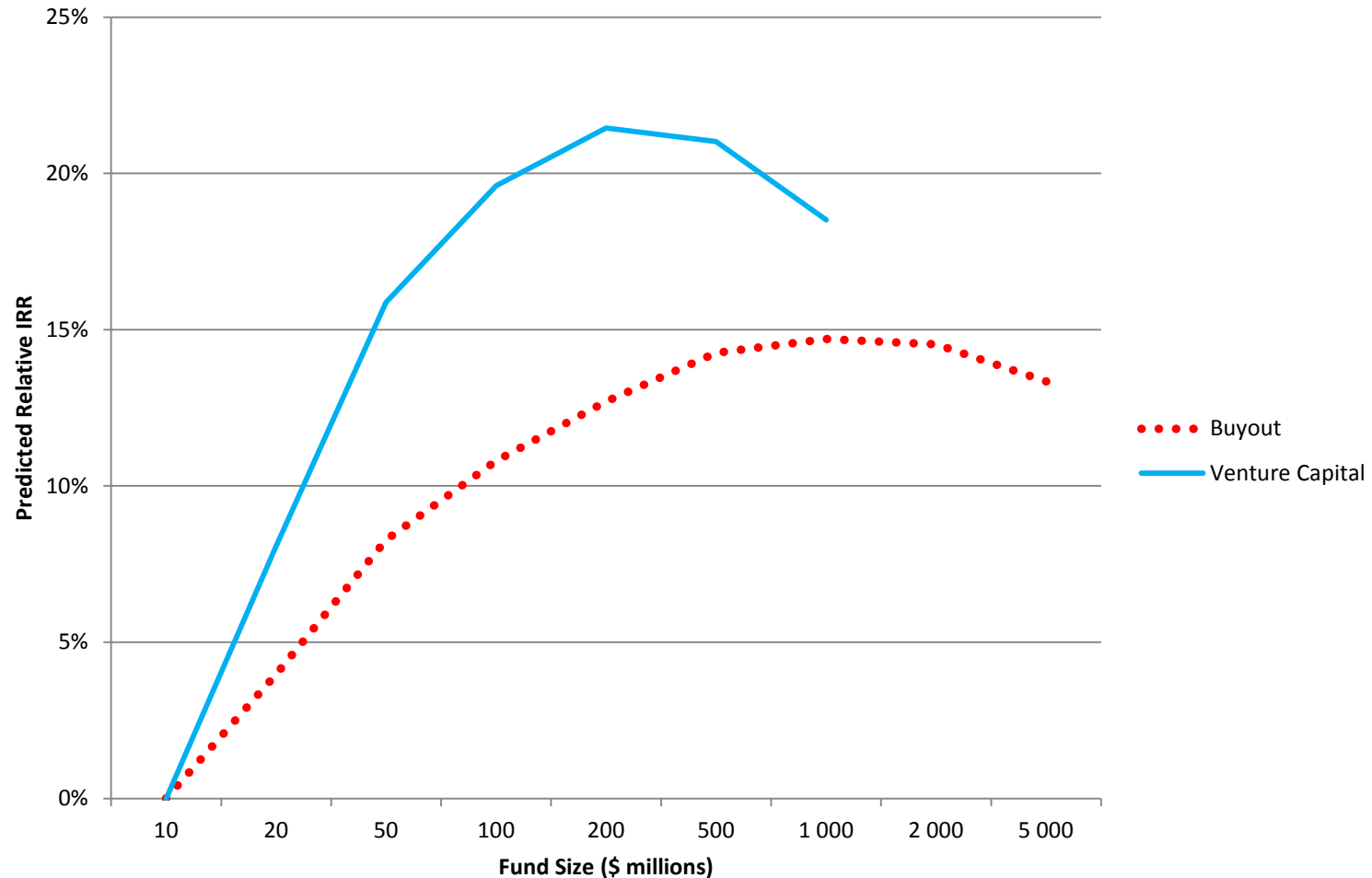


- Concave relationship between IRR and fund size.
- Fund size is measured as capital committed at closing.
- Regression results control for vintage year, fund category.



# Looking at venture and buyout funds separately

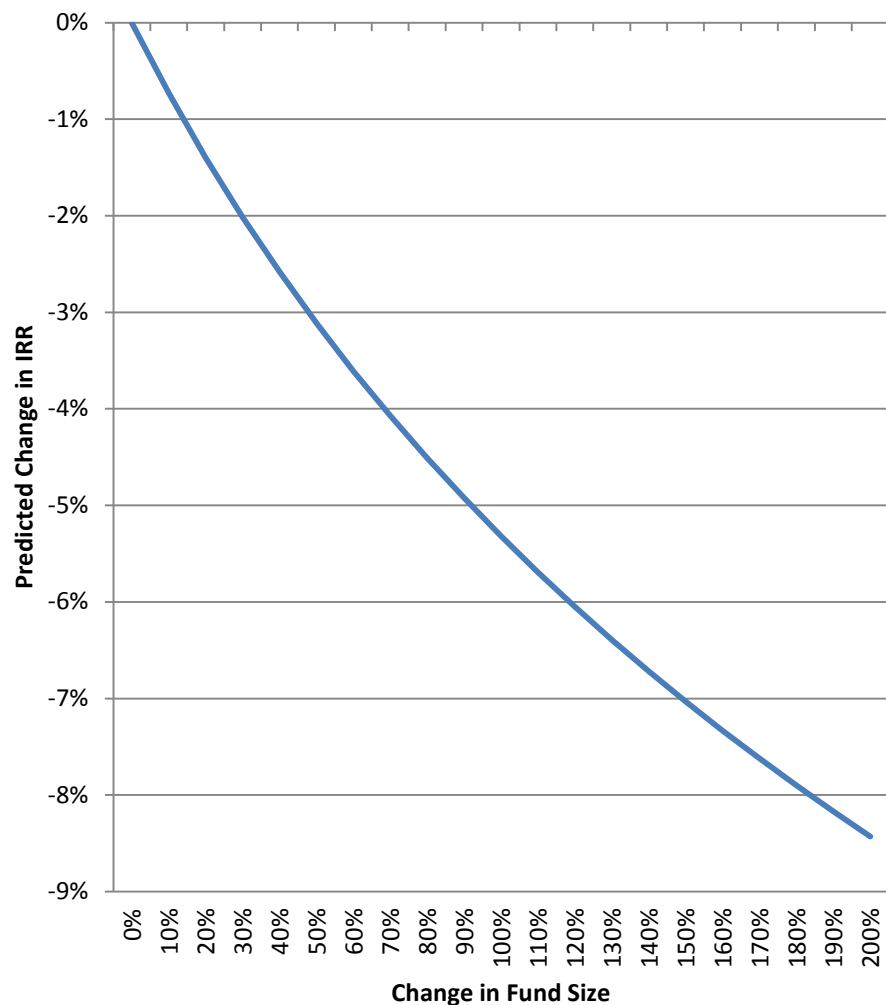
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Source: Lerner, Leamon and Hardyman  
[2011]

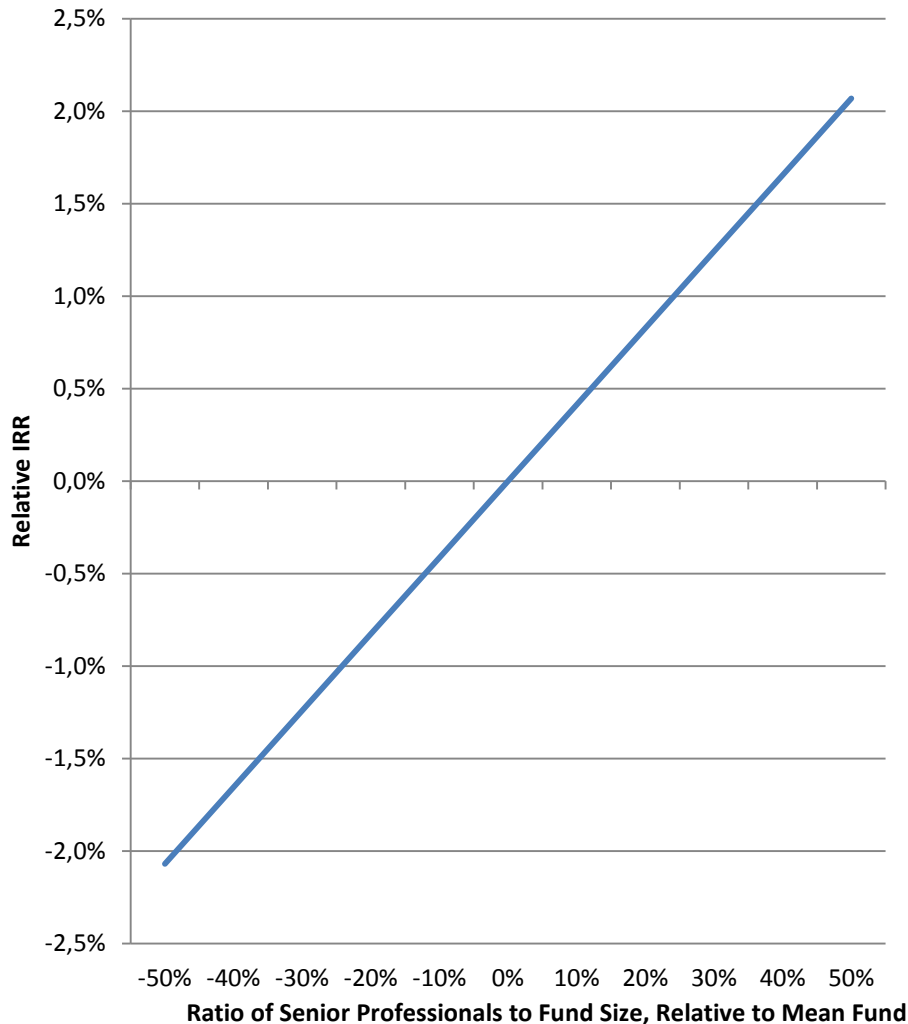
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# Change in fund size and returns



- Negative relationship between change in IRR and change in fund size for a given firm.
- Fund size is measured as capital committed at closing.
- Regression results control for vintage year effect, fund category, and firm fixed effects.

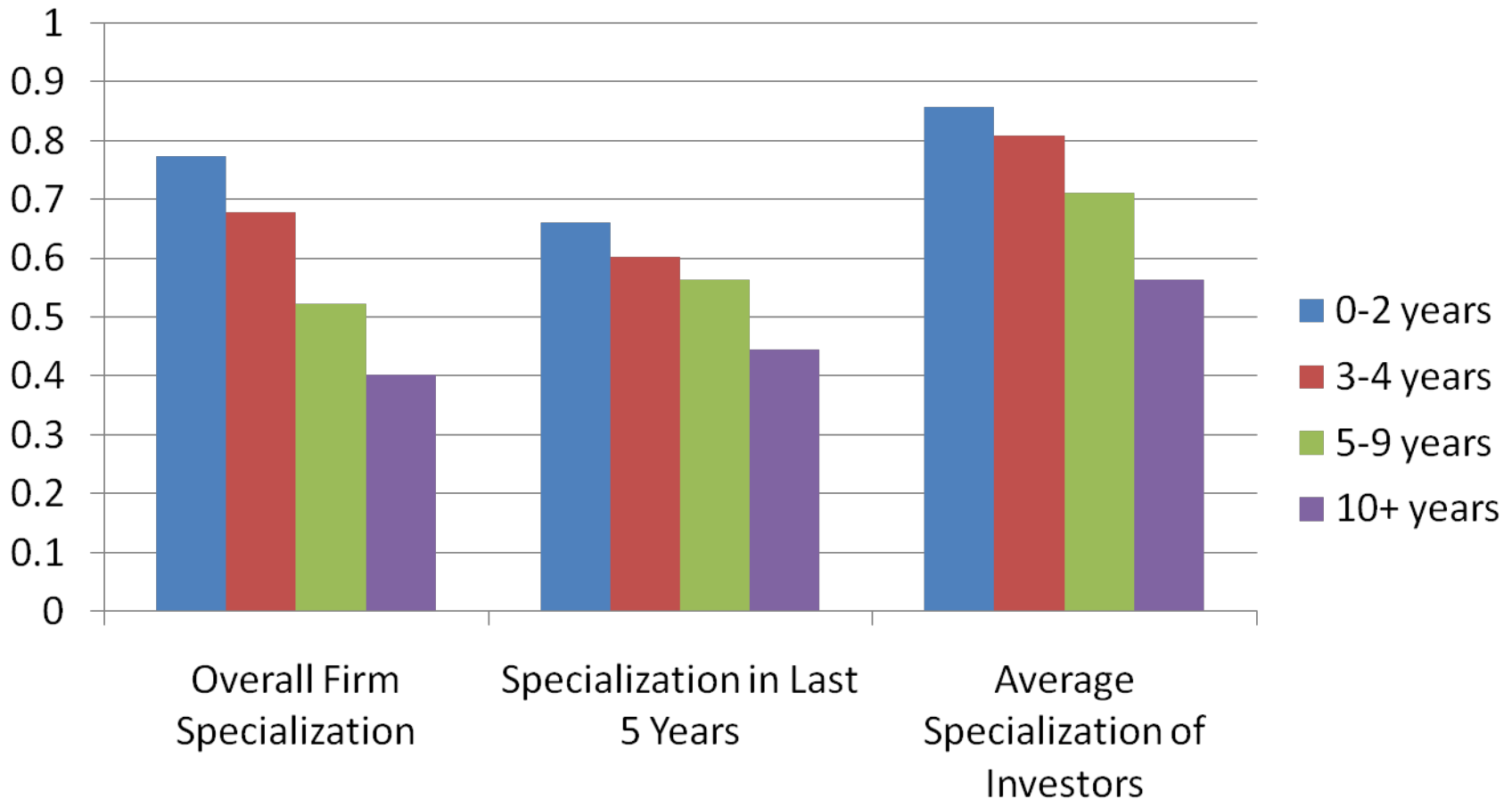
# Explanation 1: Partner to size ratio



- Positive relationship between IRR and the ratio of partners to committed capital.
- Regression results control for vintage year effect, fund category, and fund size.

# Explanation 2: Specialization over time

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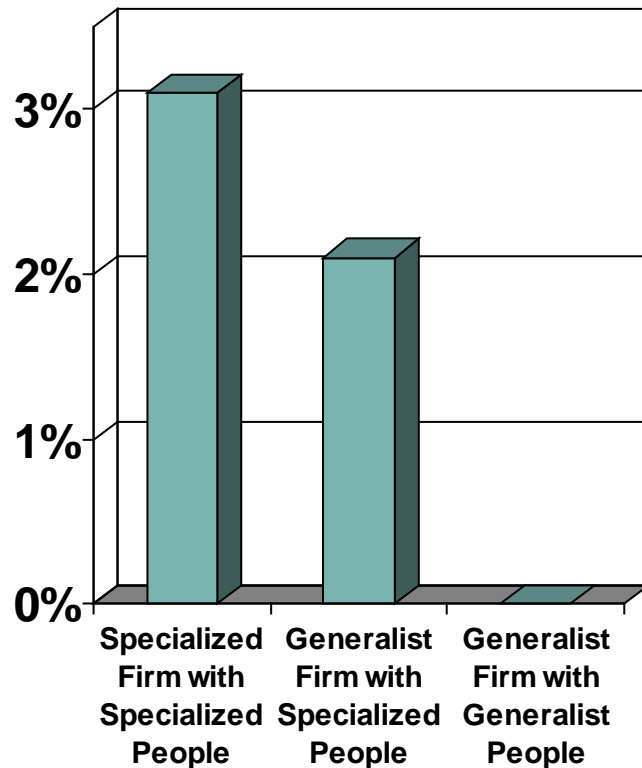


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Source: Gompers, Kovner, Lerner and Scharfstein [2008]

# Difference in deal success rate

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- Specialist firms are more likely to have successful deals.
  - I.e., 30% vs. 32.1% vs. 33.1%.
- Partners' focus especially matters.

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# And “persistence of persistence” is being questioned

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- Recent empirical studies concur on persistence during the 1990s, and agree that the effect has diminished for some or all PE sectors during the 21<sup>st</sup> century. Why?
  - GP competition has made consistently above average returns increasingly rare.
  - Entry of accelerators, angel groups, etc.
  - Operational improvements may have overtaken deal origination as a primary driver of VC success, in essence levelling the GP playing field by favoring skill over resources:
    - This may have led to a “changing of the guard” in terms of top funds.
      - Ewens and Rhodes-Kropf (2013) show that the partner’s human capital is 2x-5x more important than the VC firm’s organizational capital (“brand value”) in explaining performance.
- **Persistence in VC is more questionable than ever, and much more research needs to be done.**

# Alternative perspectives

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- Established order will remain:
  - ▣ Constancy of performance over time.
  - ▣ Increased importance of brand.
  - ▣ Globalization bring benefit to the best.
- Change is coming:
  - ▣ Difference of VC from I-banking, law.
  - ▣ Local nature of activity.
  - ▣ Organizational challenges associated with scaling.

# 3. Questions about where the money will come from?

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- Two dimension of change...
  - ▣ Entry of venture alternatives.
    - Angel groups, corporate venturing, accelerators...
      - Will focus here on latter.
  - ▣ Shift in priorities among traditional capital sources.



# Incubators/Accelerators

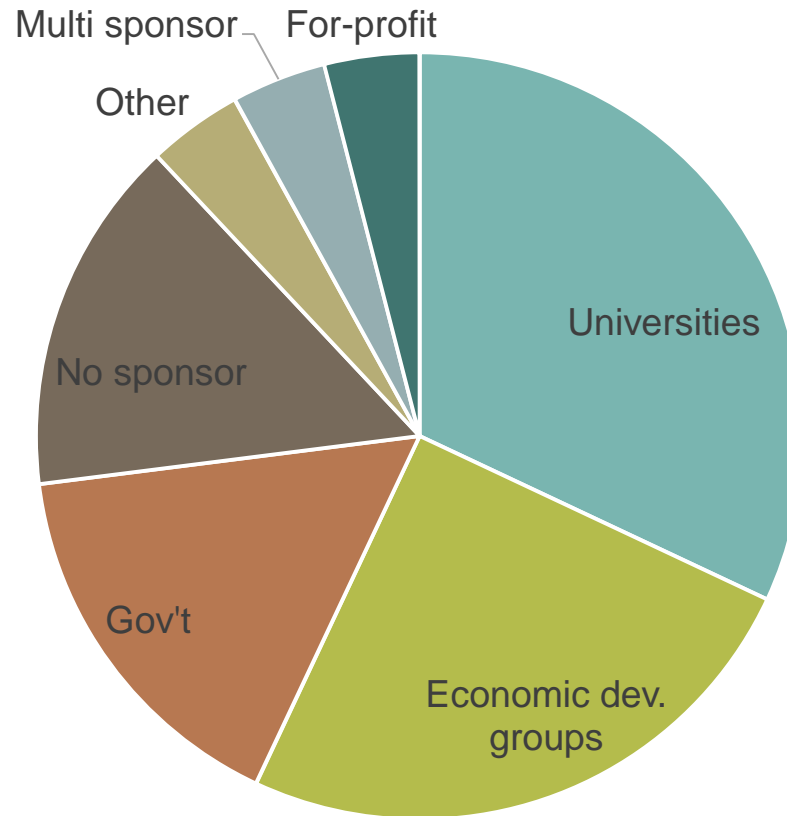
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- Not the first time for this movie!
- Date back to 1950s.
  - Huge in the Internet boom.
- Now seeing a resurgence.
- As of October 2012, 1,250 incubators in US.
  - ~7,000 incubators worldwide.
  - As of 2014, estimated 300-2,000 accelerators on six continents.

Source: *2012 State of the Business Incubation Industry*, National Business Incubator Association, [www.nbia.org](http://www.nbia.org), Daniel C. Fehder and Yael V. Hochberg, "Accelerators and the Regional Supply of Venture Capital Investment," *Paper Presented at NBER/KAIST conference*, September 2014.

# Sponsorship of North American Accelerators (as of 2012)

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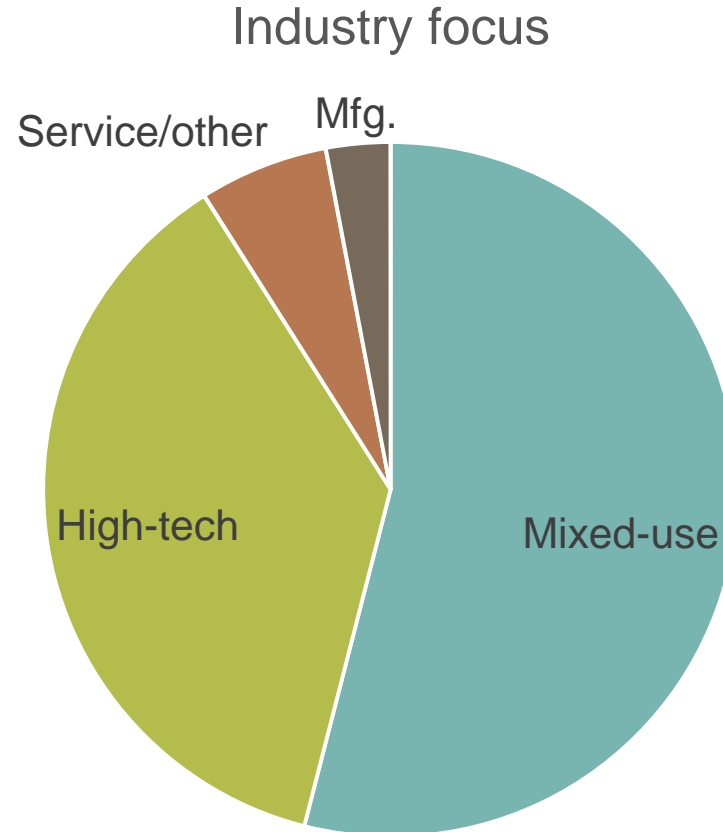


Source: *2012 State of the Business Incubation Industry*, National Business Incubator Association, [www.nbia.org](http://www.nbia.org),

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# Focus of North American accelerators

35



Source: *2012 State of the Business Incubation Industry*, National Business Incubator Association, [www.nbia.org](http://www.nbia.org),

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# Private accelerators

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- Avoid “incubator” name—“Sounds as if it’s on life support.”
  - Accelerator is more uplifting, entrepreneurial.
- Privately funded groups usually take equity (5-7% equity for \$22- \$150K). Offer co-working space and services.
  - Y-Combinator, Launchpad LA, MuckerLab, Amplify, StartEngine, TechStars, etc.
  - Competitive entry.
  - Short tenure (3-4 months).
  - Test viability of start-up vs. the real world.

# University-based accelerators (UBAs)

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- ❑ Historically: nurture vulnerable nascent businesses.
  - Longer stay: 1-4 years.
    - May then move to other space on campus.
- ❑ Universities rarely take equity but may restrict support to teams with at least one current or former student.
  - Sometimes limited to engineering school.
- ❑ May invest (\$1K - \$20K).
- ❑ Track record open to question.
  - But little recent academic research.
- ❑ Effort among top schools to apply lessons of private accelerators.

# Benefits of University-based Accelerators (UBAs)

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- Provide shared facilities.
  - Offices, administrative staff, access to financial support.
    - Grant and VC.
- Establish partnerships.
  - Transfer knowledge and expertise from university to economy at large.
- Generate economic development.
  - Best examples are also in VC-hotbeds (Silicon Valley/San Diego; Boston).

# UBA model

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- University links academics, graduates, students to resources.
  - ▣ Provide office space, administrative support, mentorship, connections.
    - Sometimes provide money.
  - ▣ Link with big corporations who will provide funding in exchange for access to product development.
  - ▣ Question on IP protection.
    - If too draconian, stifles innovation (even in classrooms).
    - Better to be generous.
      - Google paid annual \$400K royalty to Stanford until 2011.
      - Stanford sold Google stock at IPO for \$15.6M.

# Theory: UBAs help companies through the “five stages” to achieve entrepreneurial growth.

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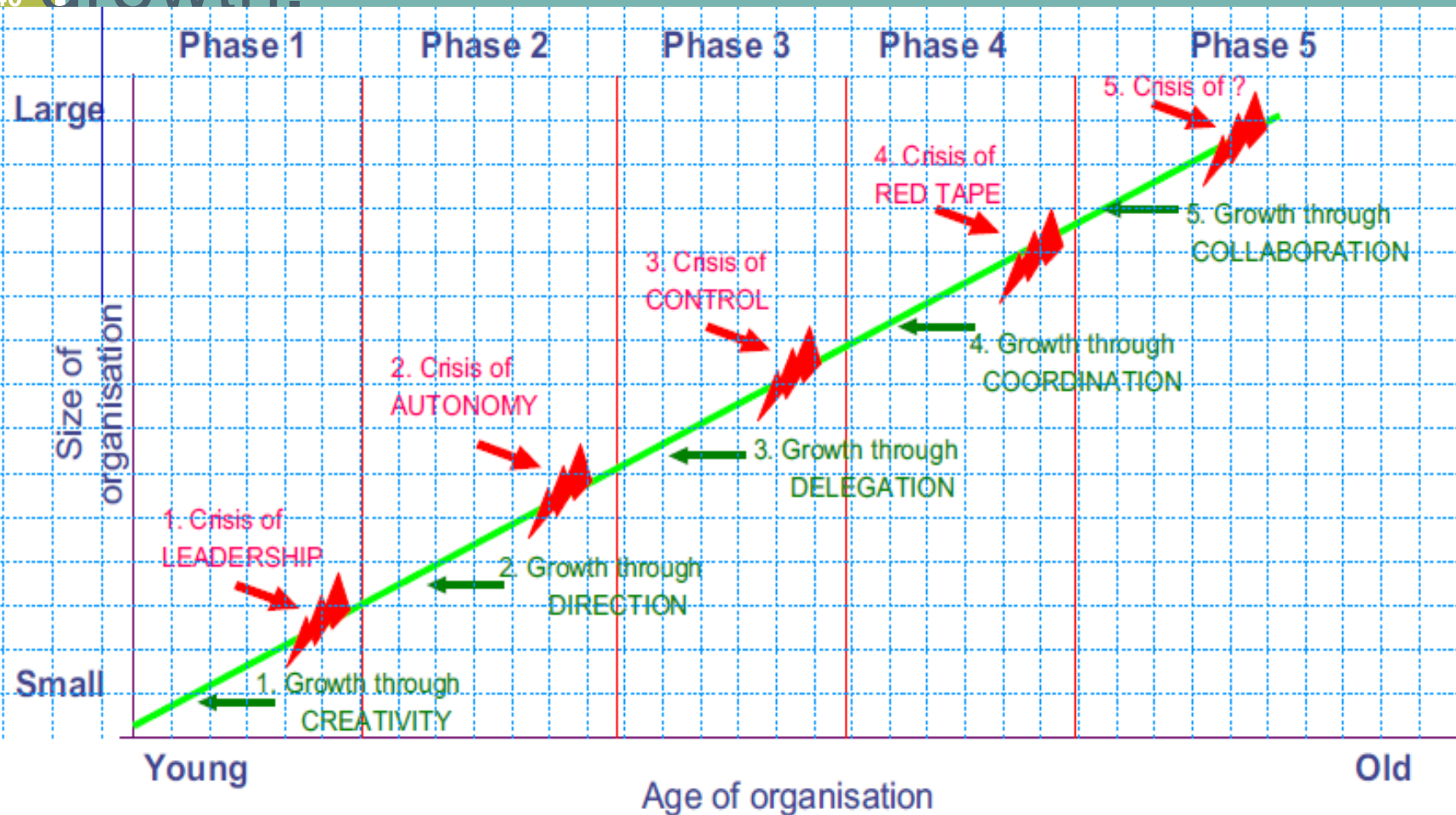


Fig. 2. Characteristics of Greiner's growth model (Greiner, 1972).



# Importance of interventions change over time.

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- McAdam & McAdam (2008) did extensive interviews with 18 high-tech spin-outs from University Science Park incubators in Ireland. Determined the following benefits:
  - Support:
    - Founder can focus on developing product, not finding telephone service.
  - Credibility:
    - For young firm, “real business address” is helpful.
    - For older firm (3+ years), being in the accelerator is akin to living in your parents’ basement.
  - Advice/support:
    - Significant help in accessing and preparing for VC financing.
      - Regardless of age.

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# How well did they work?

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- Surprisingly little recent comparative analysis.
- Analysis from the prior wave found little impact:
  - Colombo & Delmastro (2002) found marginal differences between UBA-based and independent start-ups.
    - Easier for UBA groups to access public subsidies, adopt advanced tech, and participate in international R&D programs.
    - But no more innovative or better performing.
  - George et al. (2002) found UBA-based start-ups were more innovative but not necessarily more financially successful.
  - Others found no difference.

# How well did they work? (2)

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- Ensley and Hmieleski (2005) compared the top management team composition, dynamics, and performance between 102 UBA-backed high-tech start-ups and 154 comparable independent companies.
  - ▣ UBA-based star-ups have more homogeneous mgmt. teams with weaker dynamics.
  - ▣ And were lower-performing in net cash flow and revenue growth.
    - UBA-groups: 43% growth/year; cash flow of -\$123,760.
    - Independent: 78% growth/year; cash flow of +\$90,156.

# Much depended on the tech transfer model

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- Success of UBAs depends in part on the tech transfer model.
  - ▣ Licensing for equity.
    - Less strongly associated with new venture creation.
    - But long-run higher rate of return.
  - ▣ Licensing for sponsored research.
    - Most associated with new venture creation.
    - Least associated with existence of a UBA. Licensing for cash.
    - Most common but least associated with new venture creation.

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Source: Markman et al., "Entrepreneurship and university-based technology transfer," *Journal of Business Venturing*, 20 (2005).

# Best practices for UBAs

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- Less stringent affiliation requirements.
  - Stanford: one founder with a material stake must have been enrolled in or held a post-doc or faculty appointment at Stanford in the past 4 years.
- Lots of talented mentors and advisors.
  - 2011-2013: Stanford accepted 90 companies, graduated 60.
  - 85% of graduates received more than \$100M funding in total.

# Australia's experience

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- Building on Information Technology Strengths (BITS) launched in 1999 with \$158M from Telstra sale.
  - ▣ 11 incubator centers for SMEs in IT and Telecom.
  - ▣ Additional funding in 2001 and 2004.
- Issues: most successful entrepreneurs may have been those running the incubator.
  - ▣ 7 of the incubators gave less than 50% of funding in cash to incubated firms.
    - Worst example gave 31%.
    - Most successful firms from InQbators, which gave 95% of its funding to its firms.

# Australia's experience (2)

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- And some incubators created impediments to success!
  - ▣ Required start-ups to use in-house services rather than best or lowest-cost.
  - ▣ Charged above-market fees for telephone and rent.
    - And threatened to expel firms that did not use these services.
- Later funding linked to performance of portfolio companies.

# But gold-standard are private accelerators

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- Halo of acceptance.
  - ▣ Lower acceptance rate than Ivy-league schools.
  - ▣ Contacts with “superstars.”
  - ▣ Buzz of being with really smart, creative people.
- Aligned interests.
  - ▣ Because accelerator operator has equity share, chooses best companies.
    - Regardless of location.
  - ▣ Incentivized to offer effective support quickly.
  - ▣ Eager to see company succeed or fail fast.
- New generation of UBAs attempt to build on these examples.

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# U.S.-based accelerator programs founded 2005-2012 (primarily for- profit)

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Accelerator Name	First Class Year	Location	Accelerator Name	First Class Year	Location
Y Combinator	2005	Silicon Valley, CA	Dreamit Ventures - NYC	2011	New York, NY
Techstars - Boulder	2007	Boulder, CO	gaurStor -- Milwaukee	2012	Milwaukee, WI
Dreamit Ventures - Philadelphia	2008	Philadelphia, PA	Hatch	2012	Norfolk, VA
AlphaLab	2008	Pittsburgh, PA	Blueprint Health	2012	New York, NY
Tech Wildcatters	2009	Dallas, TX	StartFast Venture Accelerator	2012	Syracuse, NY
Techstars - Boston	2009	Boston, MA	Accelerate Baltimore	2012	Baltimore, MD
Capital Factory	2009	Austin, TX	Telluride Venture Accelerator	2012	Telluride, CO
First Growth Venture Network	2009	New York, NY	Alchemist Accelerator	2012	Silicon Valley
Betaspring	2009	Providence, RI	LaunchHouse	2012	Cleveland, OH
Launchpad LA	2009	Los Angeles, CA	MindTheBridge	2012	Silicon Valley, CA
AngelPad	2010	San Francisco, CA	Techstars - Cloud	2012	San Antonio, TX
Brandy	2010	Cincinnati, OH	healthbox -- Chicago	2012	Chicago, IL
BoomStartup	2010	Sandy, Utah	StartEngine	2012	Los Angeles, CA
JumpStart Foundry	2010	Nashville, TN	SURGE Accelerator	2012	Houston, TX
Techstars - Chicago	2010	Chicago, IL	Triangle Startup Factory	2012	Durham, NC
Portland Incubator Experiment	2010	Portland, OR	Rock Health -- Boston	2012	Boston, MA
NYC Seed Start	2010	New York, NY	MuckerLab	2012	Santa Monica, CA
500 Startups	2010	Mountain View, CA	The Iron Yard	2012	Greenville, SC
Techstars - Seattle	2010	Seattle, WA	Bindom - Detroit	2012	Detroit, MI
Entrepreneurs Roundtable Accelerator	2011	New York, NY	InnoSpring	2012	Santa Clara, CA
FinTech Innovation Lab	2011	New York, NY	New York Digital Health Accelerator	2012	New York, NY
NewMe	2011	Mountain View, CA	Co.Lab Accelerator	2012	Chattanooga, TN
Portland Seed Fund	2011	Portland, OR	Tandem	2012	Silicon Valley, CA
Techstars - NYC	2011	New York, NY	Blue Startups	2012	Honolulu, HI
Imagine K12	2011	Silicon Valley, CA	TechLaunch	2012	Montclair, NJ
Seed Hatchery	2011	Memphis, TN	ARK Challenge	2012	Fayetteville, AK
Rock Health -- San Francisco	2011	San Francisco, CA	gaurStor -- Madison	2012	Madison, WI
Amplify LA	2011	Los Angeles, CA	Impact Engine	2012	Chicago, IL
Start Engine	2011	Los Angeles, CA	healthbox -- Boston	2012	Boston, MA
Capital Innovators	2012	St. Louis, MO			

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Table 1, Daniel C. Fehder and Yael V. Hochberg, "Accelerators and the Regional Supply of Venture Capital Investment," Paper Presented at NBER/KAIST conference, September 2014.

# Impact of for-profit accelerators

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- Hochberg & examined 59 accelerators that had graduated at least 2 classes.
  - ▣ Determined that they did impact the regional entrepreneurial ecosystem.
    - Metro areas with accelerator showed more seed and earl-stage financing activity.
      - Significant externalities.
    - Indicates that accelerator activities that attract VCs to the area (demo days, etc.) may increase the exposure of non-accelerated companies in the area to the investor.

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# Impact of accelerators

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City/Accelerator	Pre-accelerator companies financed (avg)	Post-accelerator time pd. companies financed	Of these, accelerator graduates financed
Boulder/TechStars	4.80	10.7	2.30
Cincinnati OH/The Brandery	0.55	4.0	1.45

Post Accelerator Impacts in the region:

- Average VC activity overall increases from a mean of 1.75 deals per year to 3.5 deals per year (104.3%).
- Increase of 85.6% in number of distinct seed and early-stage investors.
- 1,830% increase in seed and early-stage funding.

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# Implications for policy

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- UBAs face a dilemma:
  - ▣ Funding current students/graduates/ professors vs. funding best opportunities that apply their technology regardless of team affiliation.
  - ▣ Making money on current technology vs. long-term bet on equity in very risky start-ups.
- How have things changed for UBAs from the earlier experiences?
  - ▣ Learn lessons from private accelerators.
  - ▣ Or team with them.
  - ▣ Or encourage them to open nearby.
    - Substantial spill-over benefits!
- More on this later in the program!

# And also about capital sources...

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- Enormous interest on part of LPs today about bypassing GPs by investing directly:
  - ▣ Sovereign funds, funds-of-funds, endowments, pension funds, and even family offices...
    - Preqin, 2013:
      - 43% of LPs are actively seeking co-investment rights, 11% of LPs are strongly considering.
      - 65% of investors expect to increase their allocations to co-investments (9% expect to reduce).
  - ▣ More broadly, there many assertions but little evidence.

# Easy to understand motivation

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- Payments *per partner per fund*, based on 240+ PE/VC partnerships (\$MMs):

	<i>VC</i>	<i>LBO</i>
□ Carried interest:	5.2	10.1
□ Management fees	10.6	18.5
□ Other fees:	1.3	4.1
□ <b>Total</b>	<b>17.1</b>	<b>32.7</b>

- Metrick and Yasuda [2010]

# A initial effort to assess

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- The data is proprietary: Collaboration of 7 large LPs.
  - Fang, et al. [2013]
- Complete cash flows for 391 direct investments made by a set of large institutions between 1991 and 2011:
  - \$23 B capital invested (\$14B (61%) co-investments, \$9B solo investments).
  - Cash flows are net of fees (relevant for co-investments).
  - In some analyses, back out also estimated costs of running programs.
- Seven investors are younger and larger than typical LP; probably more sophisticated.
- Distribution of outcomes of deals (e.g., IPO, bankruptcy) look similar to direct deals in CapitalIQ.

# Comparing Performance

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- “Best” measure: performance relative to public markets (PMEs):
  - ▣ Direct investments beat public market.
    - But so do PE funds.
  - ▣ Better to compare direct investment PMEs to funds’:
    - Direct buyouts outperform funds in 1990s, but not after.
    - Direct venture capital underperforms in 1990s; and even more in 2000s.
- IRRs and multiples similar to PMEs:
  - ▣ Little evidence of outperformance relative to funds.
  - ▣ Sharp deterioration of relative performance in 2000s.
  - ▣ Venture capital directs do particularly poorly.
  - ▣ Also, better performance by solo investments than co-investments.



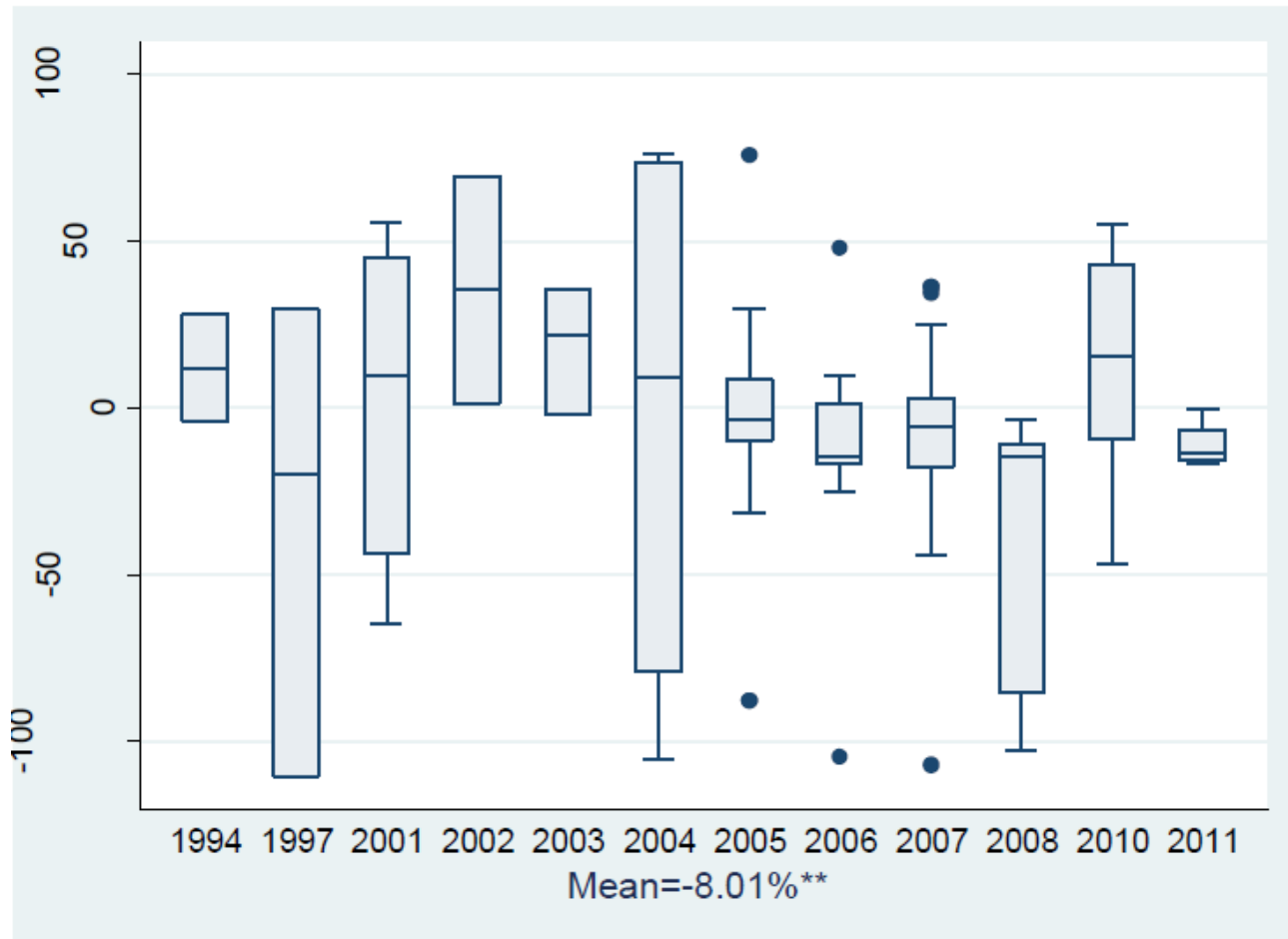
# Why poor co-investment performance?

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- Bad timing:
  - Concentrated in hot markets about to turn down.
- Big deals:
  - Median deal is 3x the size of the deals done by same GPs around the same time.
- Bad deals:
  - Later rounds at higher valuations.

# Comparing co-investments to the same fund performance

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PROPRIETARY AND CONFIDENTIAL

# When do solo deals do well?

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- Local deals.
- Buyout deals.
- Deals when economy is relatively robust (less need for intervention?).

→ “Plain vanilla” transactions when better information, less need for special skills?

# Raises many questions about going it alone

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- Warning: This is a backwards-looking sample!
- Numerous cautions to LPs considering such initiatives:
  - ▣ But tremendous momentum behind such initiatives.
- **Will VC suffer as a result?**
- **Or will LPs discover new approaches?**

# A few predictions

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- Venture activity is unlikely to disappear.
- Globalization is likely to accelerate.
- Established order will be disrupted.
- Increasing emphasis on value added will create opportunity for corporations and others.

# Final thoughts

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- Time of extraordinary flux in venture world.
- Time to question many of fundamental “rules” of industry.
- No easy answers... but likely to see substantial opportunities...

# Thank you!

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