THE CHANGING LANDSCAPE OF NEW VENTURE FINANCING:

AN INTRODUCTION TO THE PUBLIC POLICY FORUM 2012

Josh Lerner and Thomas Hellmann

Quebec City Conference

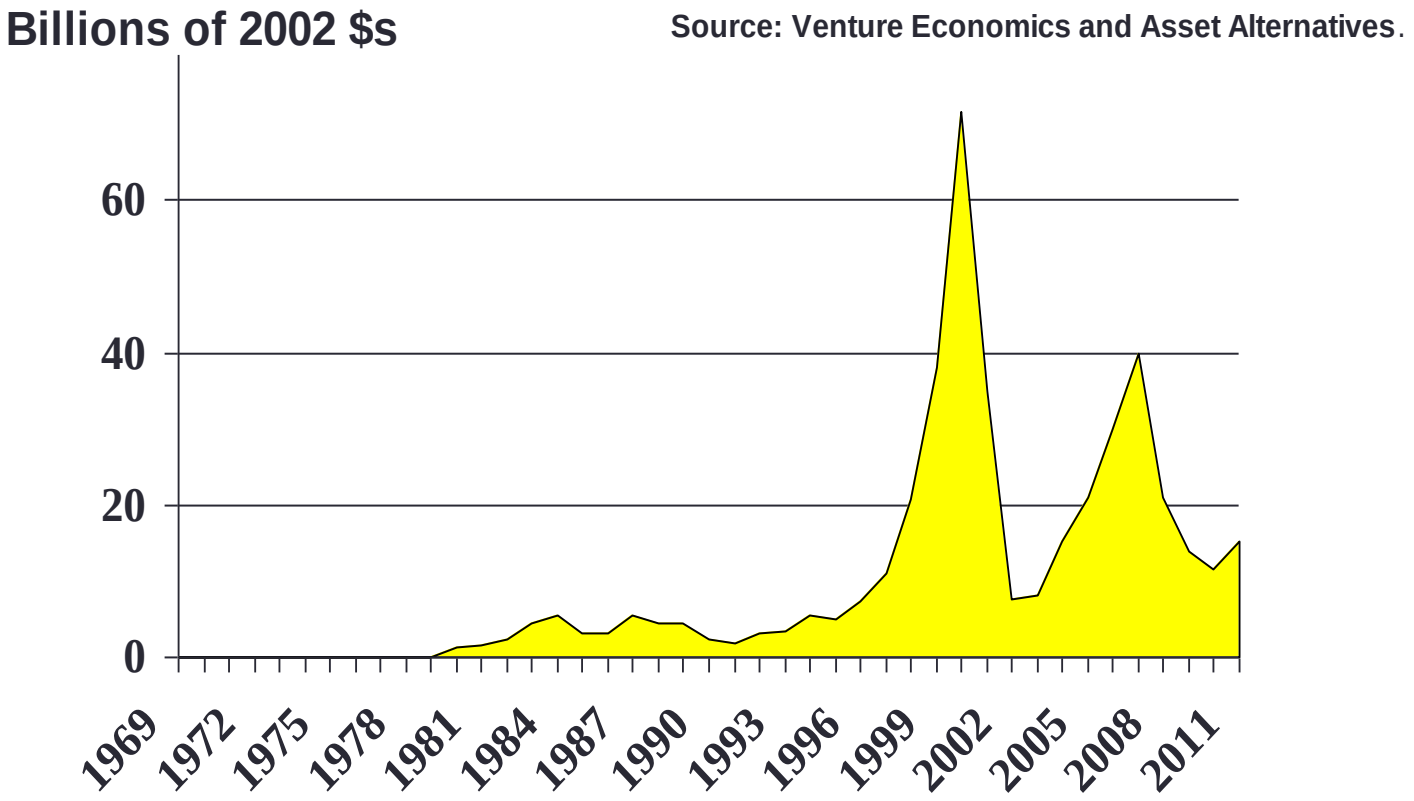
October 24th, 2012

Many questions about the venture market today

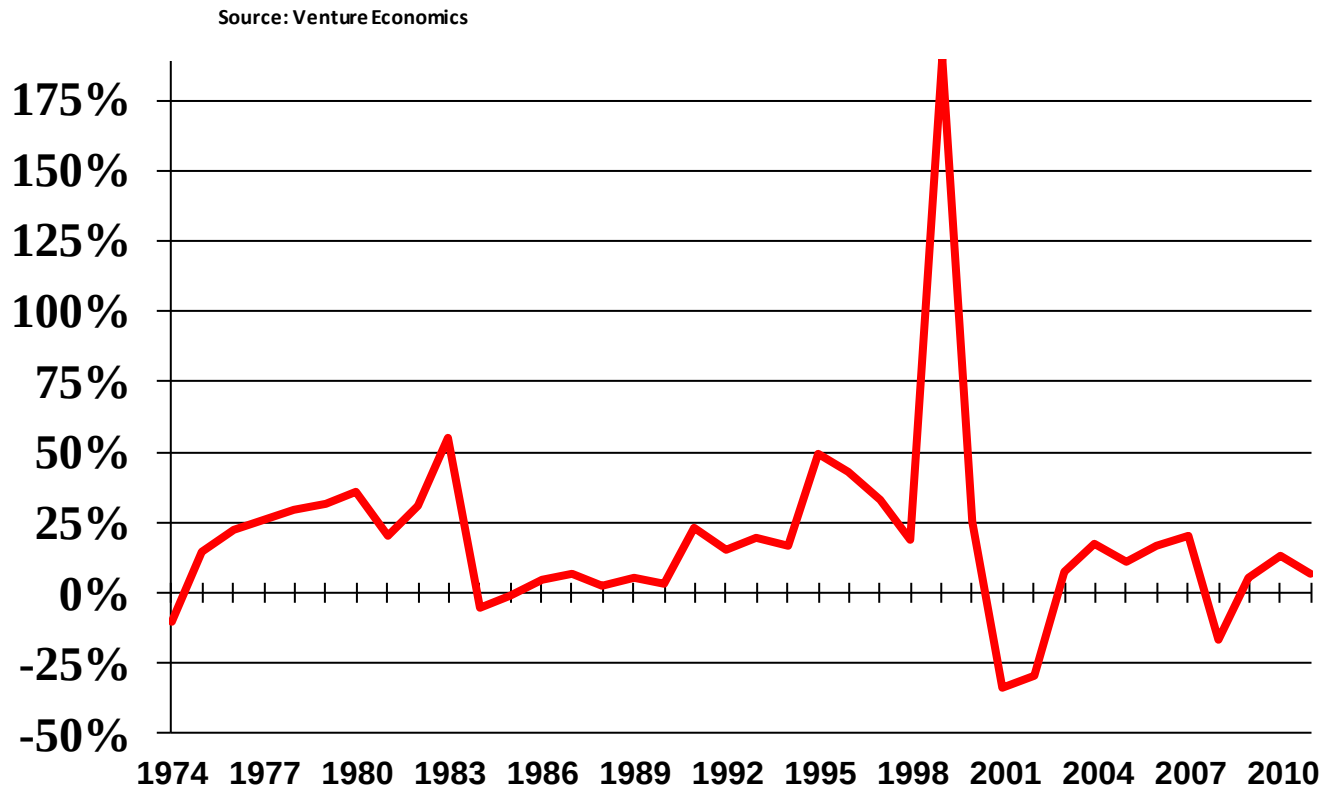
- Continued depressed level of activity and returns, at least relative to 1999-2000 level:
  - Steady state or problematic underfunding?
- Disappointments of "next big thing"
  - Low returns from Facebook, Zynga, Groupon, etc.
  - Discrediting of "follow on" strategy.
- Questions about impact:

  "We wanted flying cars, instead we got 140 characters."
  (Peter Thiel)

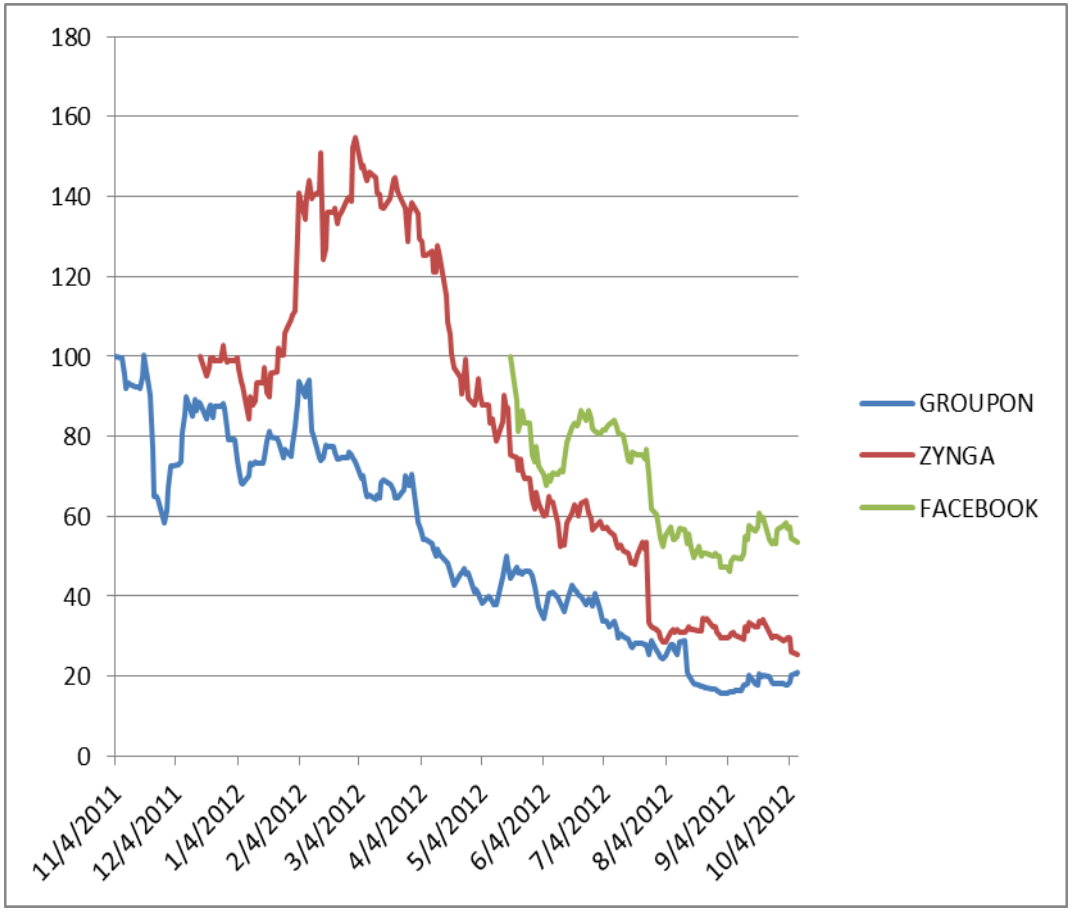
U.S. Venture Capital Fundraising 1969-2011



U.S. Venture Capital Returns 1974-2011



Returns of major social media firms



Source: Datastream. Close of first trading day normalized as 100.

Overview of talk

Part 1: Living with the down cycles

Part 2: Experimentation with new models

Part 3: Implications for public policy

PART 1: LIVING WITH THE DOWN CYCLES

Venture capital and cycles

IPO markets should be critical:

- Finance theory suggests public markets are valuable sources of information.

But public markets are an unstable environment:

- Creates understandable desire for regulatory response.
- But the law of unintended consequences.

Public markets and information

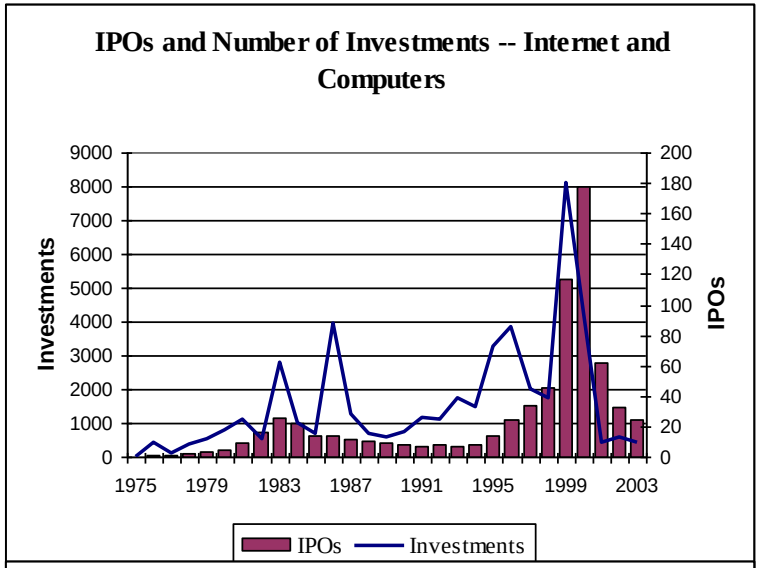
- Information on companies may be widely scattered
- Many dispersed public investors may each know something valuable
- Thus ability to raise capital, price may provide valuable information

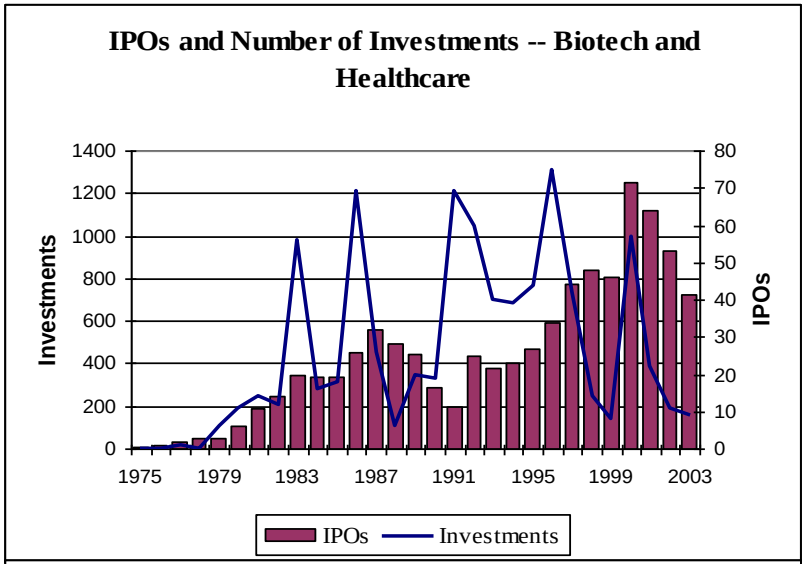
Public markets and information (2)

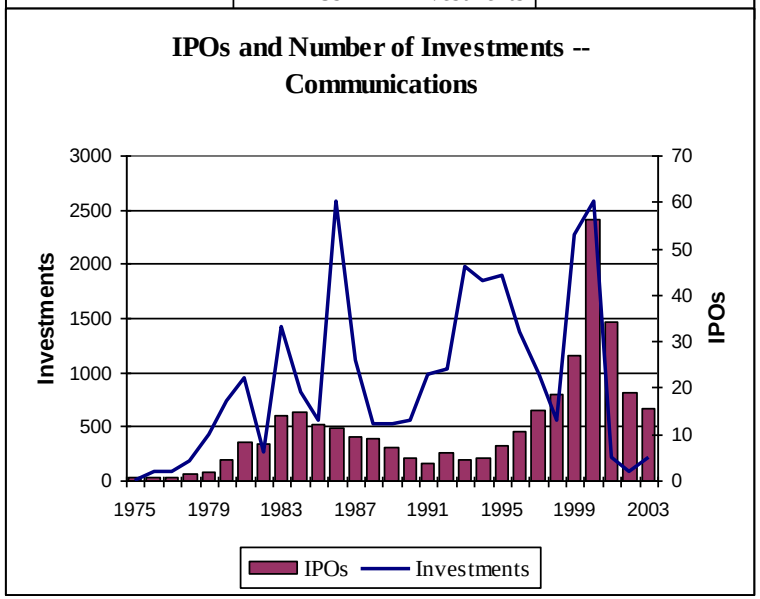
Empirical evidence suggest that venture funds "follow" public market trends:

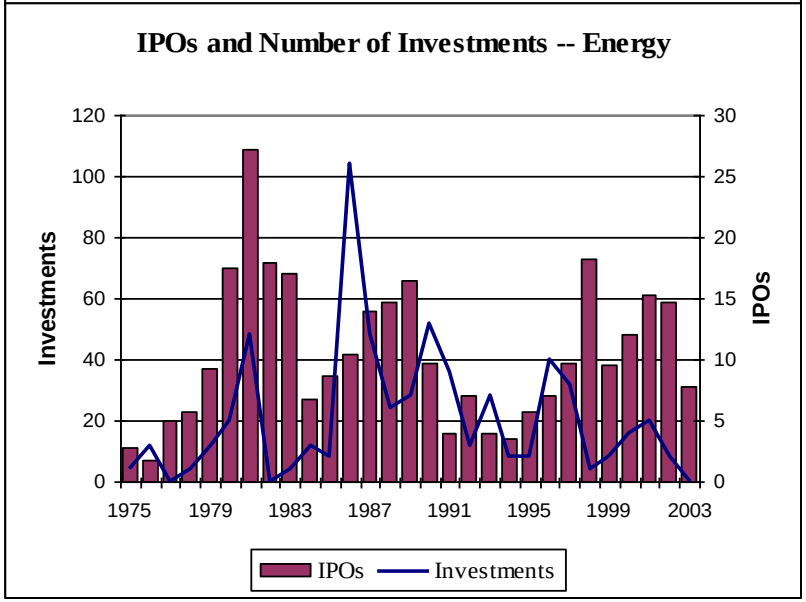
- Cases of Genentech, Netscape IPOs
- Graphical patterns
- Econometric evidence:
  - Boosting IPOs from 25th to 75th percentile leads to 22% increase in investments
  - Established groups actually follow more
    - Gompers, Kovner, Lerner and Scharfstein [2008]

IPOs and investments









Public markets and information (3)

Following trends is also associated with success:

- Industry experience increases success rates.
- The differential effect of industry experience increases in hot markets.
  - More seasoned firms seem to be more able to successfully follow signals.
    - Suggests much of success lies not in identifying trends, but adroitly following them.

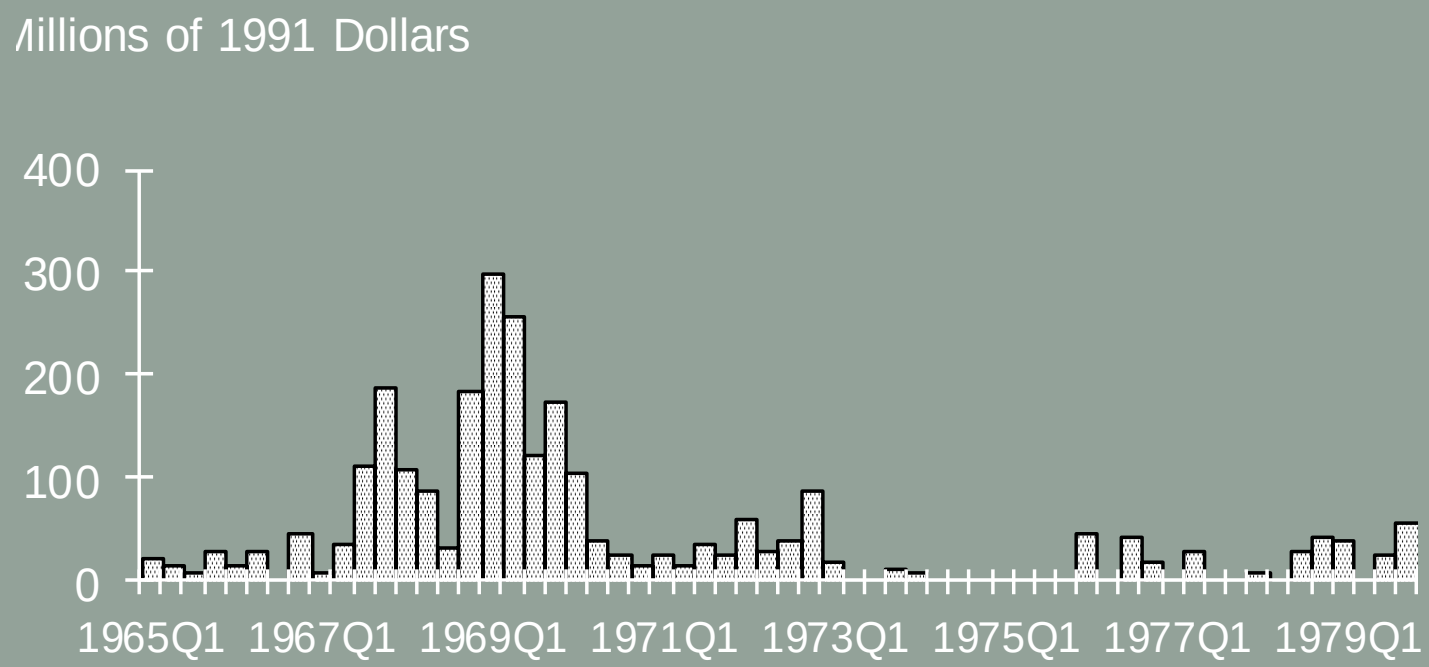
Public market distortions

- Behavioral finance suggests persistent market distortions.
- IPO environment seems rife with these:
  - “Hot issue” markets.
  - “Underpricing” of new issues.
  - Long-run underpricing

"Hot issue" markets

- Events with social media recently or Internet in late 1990s are few of many examples
- E.g., computers in 1960s:
  - Growth of venture funds
  - Similar financing cycles
  - Worries about firm quality, opportunism
  - Financing drought in 1970s:
    - Failure of many firms
    - Many ultimately profitable ideas unfunded

Public offerings by small computer firms, 1965-1980



Underpricing

- Typically, IPOs have been discounted by about 7%:
  - Interpreted as compensation for information problems
- But in hot markets, underpricing may explode:
  - E.g., 71% in 1999
  - Evidence seems more consistent with "side payments"
    - Loughran and Ritter [2004]

Underperformance

- Public stock offerings seem to underperformed public markets in NASDAQ era:
  - Particularly true for…
    - Follow-on offerings
    - Smaller IPOs
      - Ritter and Welch [2004]

The venture capital system does largely work

- Venture investors have reputational concerns and repeated relationships
- Consequently, not surprising that their offerings have:
  - Less "underpricing":
    - Late 1990s an exception
      - Lee and Wahal [2004]
  - Superior long-run performance
    - Brav and Gompers [2007]

But venture investors can exploit the system

- Timing of IPOs
  - Lerner [1994]; Gompers [1996]
- Timing of distributions
  - Gompers and Lerner [1998]
- "Side payments" in late 1990s
- Overinvestment in response to market signals:
  - Particularly for lower-tier and inexperienced groups

Costs of this behavior

For public investors:

- Reduction of returns

For society:

- Presumably, social costs associated with failed firms
- Opportunity cost of firms/technologies that could not get funding
- Bias towards incumbent firm acquisitions

Costs of this behavior (2)

For firms:

- Distraction of management from operations
- Short- and long-run costs of premature IPOs
- Weaker bargaining power in acquisitions
- Projects not pursued

For limited partners:

- Possible reduction in returns
- Difficulty in assessing performance

Example: Impact of going public "too early"

Looking at IPOs of venture-backed firms:

- Young VCs take their first firm firms public at 32 months
- More mature funds do so at 54 months
- Consequences:
  - Much less board involvement
  - 5% smaller equity stakes
  - 7-8% greater discount when go public
  - Poorer long-run stock performance
    - Gompers [1996]

Example: Impact of distributions on returns

Consider a $300 million fund

Standard terms:

- 2.5% management fee
- 20% carried interest for VCs
- But first capital return to LPs
- Three even takedowns

Investments grow at 30% annually

Six distributions, at end of years 6-11, of equal size

How does performance between distribution and sale affect returns?

Impact of distributions on returns (2)

Change in Price from Distribution to Sale	*IRR of Fund to Limited Partners*
-30%	*16%*
-20%	*18%*
-10%	*20%*
+0%	*21%*
+20%	*23%*

Example: Choice of innovative projects

Investors want to fund really innovative firms.

- But want to provide funding in stages
- And worry in the future, they and others won't be able to finance additional investment rounds.

If general optimism about future funding, investors more willing to fund risky ideas:

- Get more funding of truly innovative work in hot markets, even if have money, and all investors sensible.
  - Rhodes-Kropf-Nanda [2012],

Choice of innovative projects (2)

	40 hotter quarters	*40 cooler quarters*
Number of firms funded per quarter	213	95
Age of startup at first funding (years)	1.3	1.5
Dollars invested in first funding (MM)	$5.9	$4.3
Share of startups that failed	32%	18%
Share that had an IPO	10%	13%
Average Pre-Money Value at IPO	$376	$200
Number of patents in 3 years following first funding	4.3	3.2
Citations to patents in 3 years following first funding	18.6	13.3

But are costs of fixing behavior greater?

- Sarbanes-Oxley represents one of several regulatory responses:
  - E.g., reliance on securities litigation, reining in of analyst coverage
- While may be sensible for larger firms, costs for small firms are likely to be substantial
  - JOBS Act in U.S. tries to address through "on ramp"
- But is cure worst than disease?

Costs of potential fixes

Costs appear to be real:

- E.g., Iliev [2009] compares firms just above and below SarbOx cut-off:
  - Filers had to pay >$1/2 million more annually in audit fees alone
  - Filers has 19% lower returns in year after SarbOx implementation

Has fixing abuses fundamentally damaged the entrepreneurial finance system?

- Will fix work?

Alternative policy approaches

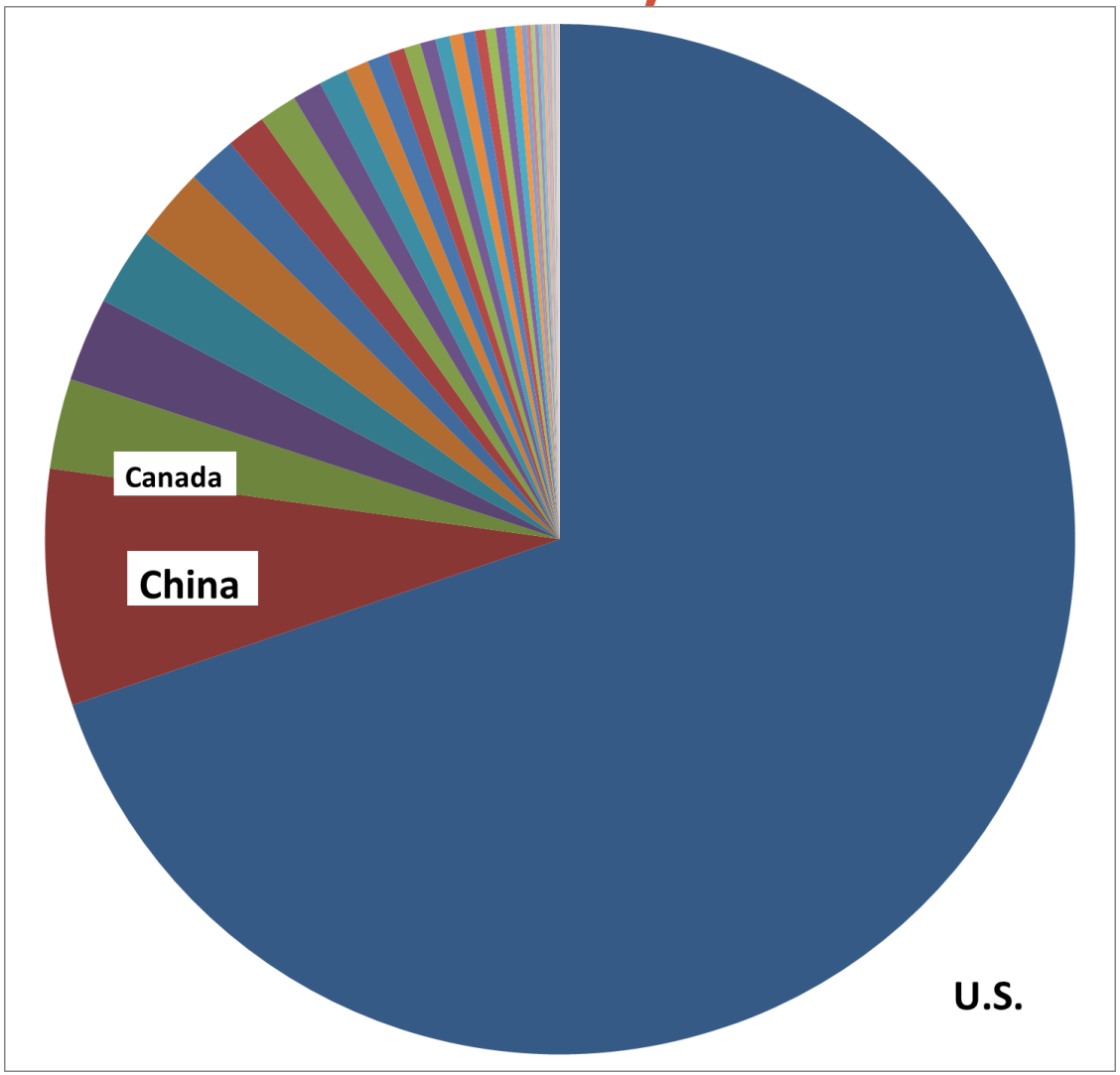
- Encouraging second-tier markets:
  - Many efforts around globe over past few years
- Adjusting regulation to assure high-quality offerings:
  - ChiNext case last year
- Building class of sophisticated institutional investors:
  - Brazil's INOVAR program

PART 2: EXPERIMENTATION WITH NEW MODELS

Venture capital had real limits

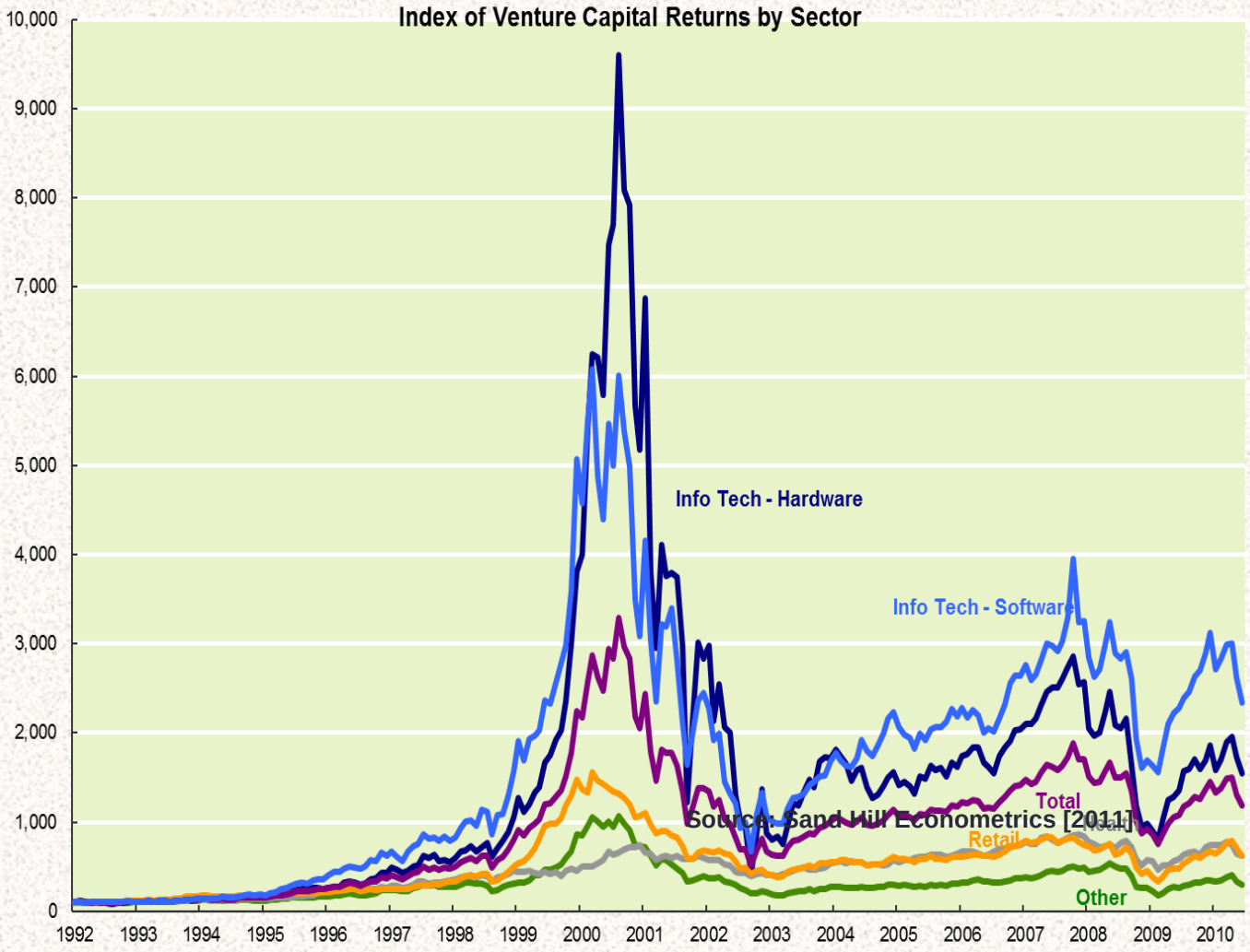
- Considerable frustration with concentration of venture investment:
  - By investment amount
  - By returns
- Natural to look elsewhere:
  - Angels
  - Incubators/accelerators
  - Crowdfunding

Venture investments, 2010



Source: Various national and regional venture capital associations [2011]

And differences by sector



All sectors normalized so January 1, 1992=100.

One historical illustration

Examine Cleveland at turn of century:

- Key period and place of industrial growth:
  - Bicycles, autos, electricity, …
- Largely, relying on personal connections and hubs to finance breakthroughs…
  - Friendships
  - Family ties
  - Mentorship
- Long-run investments with little pressure for liquidity … many did not exit even when they had the opportunity
- Providers of capital, vetting/certification, and sometimes protections against exploitation
  - Lamoreaux, Levenstein and Sokoloff [2009]

Warning: Barriers to studying these investors

- Desire of many investors to remain "under the radar."
- Lack of legal requirements to disclose activity
- Inconsistencies in definitions, e.g.:
  - "An angel is a high net worth individual who invests directly into promising entrepreneurial businesses in return for stock in the companies"
  - "A high net worth individual, acting alone or in a formal or informal syndicate, who invests his or her own money directly in an unquoted business in which there is no family connection and who, after making the investment, generally takes an active involvement in the business"

Governing angel investments

Typically, relatively little formal control:

- 8% stake on average (Wiltbank [2009])
- Few of the control rights that VCs would typically demand:
  - Most common form of investment is common stock
  - Even in U.S., where almost all VC deals use preferred stock
    - Wong, Bhatia, and Freeman [2009]

Governance rights in angel deals

Feature	Frequency
Right to participate in future funding	24%
Rules regarding "down rounds":	
Weighted ratchet	26%
Warrants at lower valuation	4%
Other ratcheting protection	11%
No reported ratcheting provision	55%
Right to force bankruptcy	5%
Contingent board or equity rights	2%
Veto management decision	5%

Source: Wong, Bhatia, and Freeman [2009]

Board representation in angel deals

Feature	Frequency
Does angel(s) get board seat?	
All angel financings	42%
Financings with VCs	39%
Pre-revenue companies	44%
First financing rounds	46%
Mean number of board seats for angels	1.4
Mean share of angel board seats	33%

Source: Wong [2002]

Relationship with VCs

- In some cases, VCs may invest after angels
- In some cases, positive synergies
- In others, not:
  - Dilution of angel's stakes
  - Loss of board seats and control
  - Differing time horizons and priorities

Comparing angels to VCs

Characteristics	Angel Investors	Venture Capitalists
Background	Former entrepreneurs	Finance, consulting, some from industry
Investment approach	Investing own money	Managing a fund and/or investing other people's money
Investment stage	Seed and early stage	Range of seed, early stage and later stage but increasingly later stage
Investment instruments	Common shares	Preferred shares
Deal flow	Through social networks and/or angel groups/networks.	Through social networks as well as proactive outreach
Due diligence	Conducted by angel investors based on their own experience - more cost efficient.	Conducted by staff in VC firm sometimes with the assistance of outside firms (law firms, etc.) - more costly
Geographic proximity of investments	Most investments are local (within a few hours' drive).	Invest nationally and increasingly internationally with local partners
Post investment role	Active, hands-on	Board seat, strategic
Return on investment	Important but not the main reason for angel investing	Critical. The VC fund must provide decent returns to existing investors to enable them to raise a new fund (and therefore stay in business)

Source: OECD [2011]

Impact of angels

- But despite limitations, U.S. estimates suggest:
  - Several times venture capital market.
  - Led to creation of 250,000 jobs in 2010:
    - 5% of all job creation.
  - Increases probability of firm survival.
- Apparent complementarities to venture activity.
- As a result, increasing policy interest world-wide.

Size of angel market

$ Millions	Angel Market. 2009		Venture Capital. 2010
	'Visible'	*Estimated Total*	*Estimated Total (all stages)*
United States	469	17,700	28,846
Canada	34	388	393
Europe	383	5,557	4,883
United Kingdom	*74*	*624*	*1,013*

Source: OECD [2011].

One area of increased policy interest: Angels co-investing

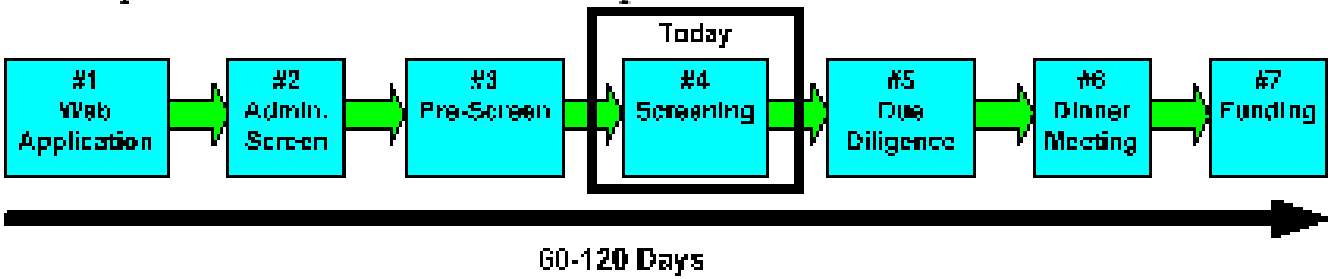
- Angel syndicates:
  - Individual angels joining together with other angels to evaluate and invest in entrepreneurial ventures
    - Often in formal groups with set rules
- Angel networks:
  - Organization whose aim is to facilitate the matching of entrepreneurs with business angels, but which remain neutral and generally refrain from formally evaluating business plans or angels

A typical angel group

- Entrepreneur approaches angel groups with business plan
- Selection funnel of screening and pitches begins
- Angels express interest in deals
- If enough, may fund

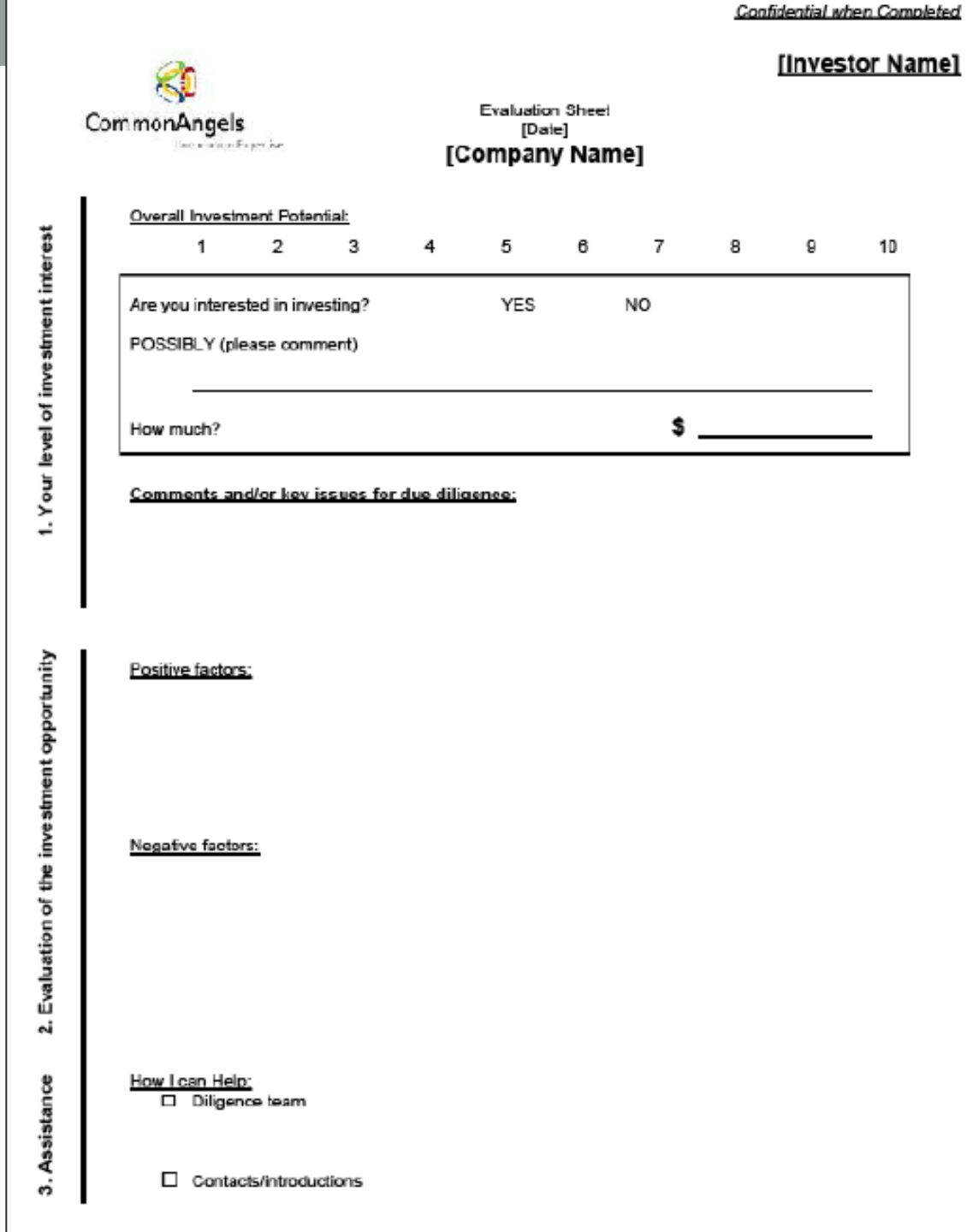
TCA Orange County Screening Overview

Welcome to the #1 Angel network in the US. We are pleased you are attending an Orange County screening session. The screening process is an important part of the TCA process. Typically, we have over 300 companies per year apply over the web for TCA funding. Approximately one third of these companies make it to the screening process which you are about to participate in. Although each year varies, we typically fund between 10 and 20 companies per year. TCA consists of 4 chapters, each facilitating the first three steps of the deal flow process a little differently. The overall deal flow process for TCA consists of 7 steps as follows:



Typical group (2)

- Centerpiece of monthly angel meetings
- Several venture pitches in a row with individual evaluation by angels
- Sample evaluation with overall scores



Confidential when Completed

[Investor Name]

CommonAngels

Evaluation Sheet
[Date]
[Company Name]

1. Your level of investment interest

Overall Investment Potential:

1 2 3 4 5 6 7 8 9 10

Are you interested in investing? YES NO

POSSIBLY (please comment)

How much? $ _____

Comments and/or key issues for due diligence:

2. Evaluation of the investment opportunity

Positive factors:

Negative factors:

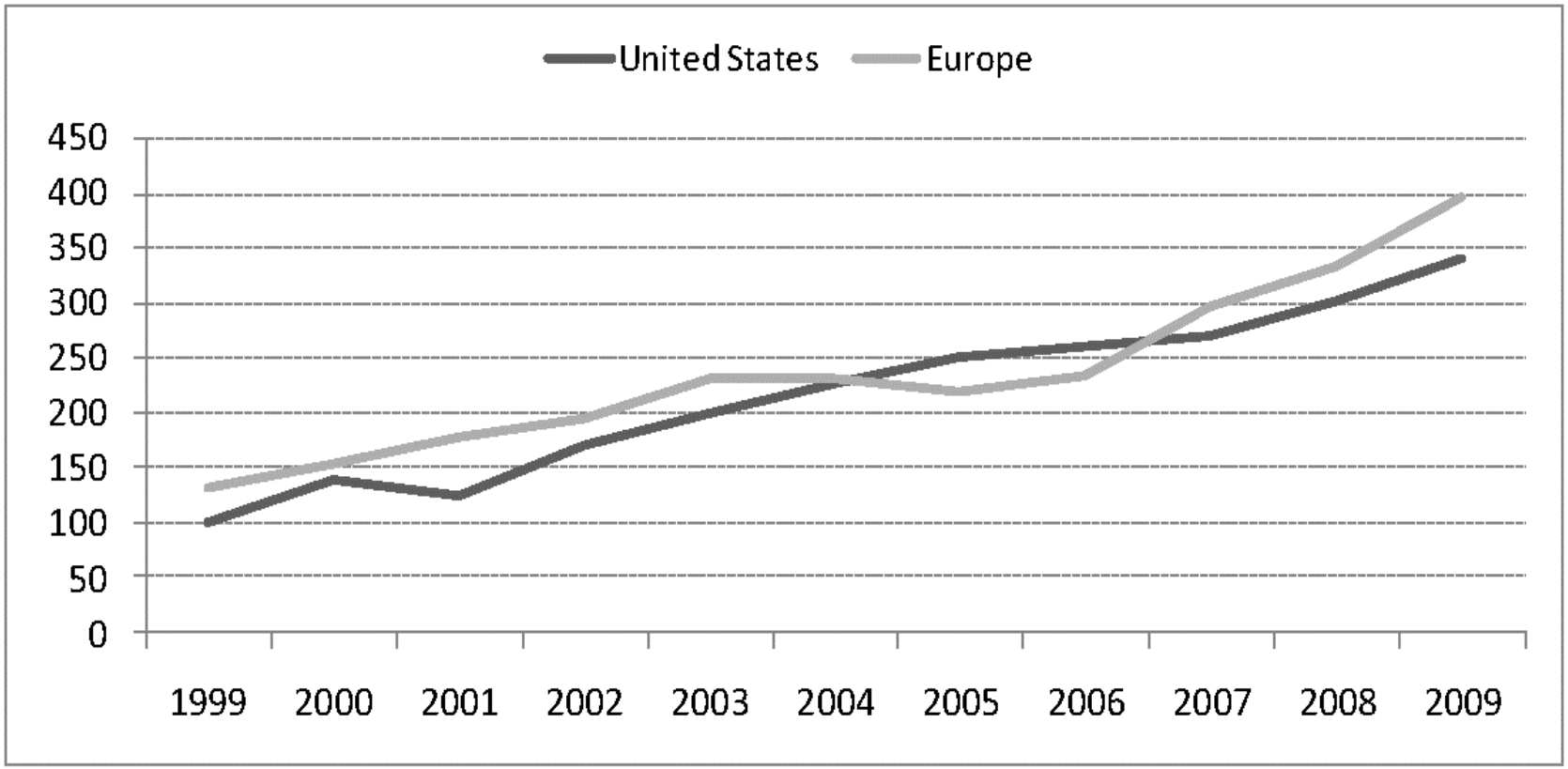
3. Assistance

How I can Help:

☐ Diligence team

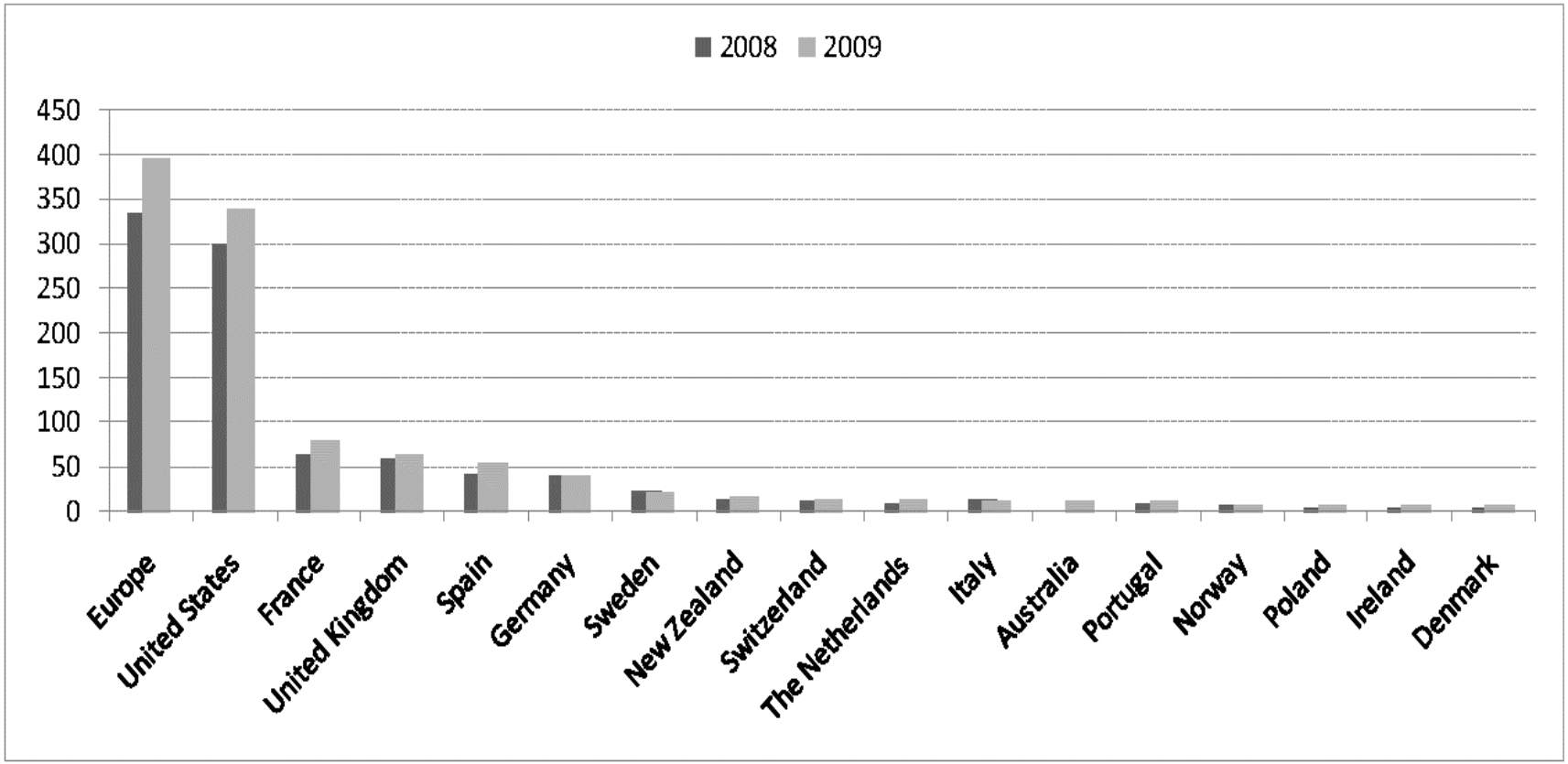
☐ Contacts/introductions

Number of angel groups/networks



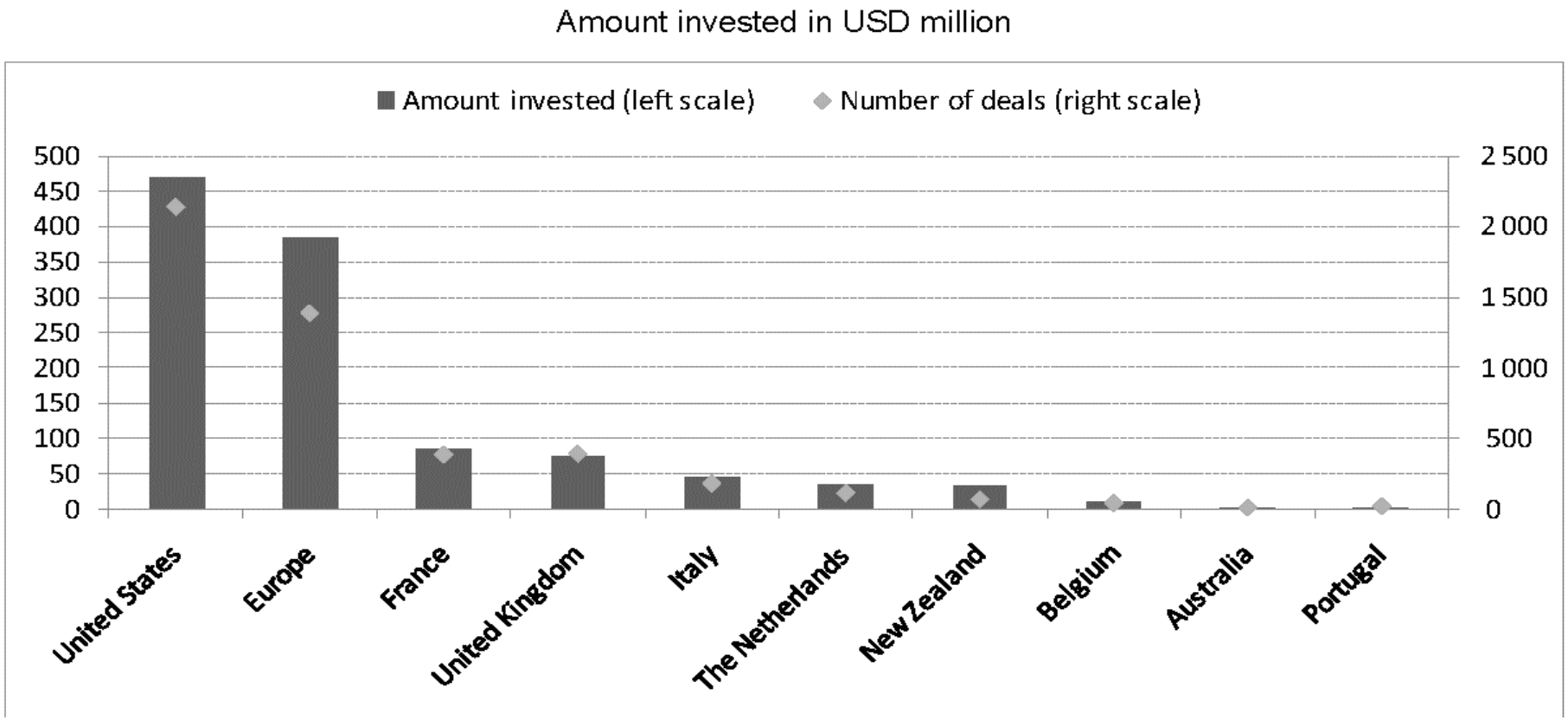
Source: OECD [2011]

Number of angel groups/networks



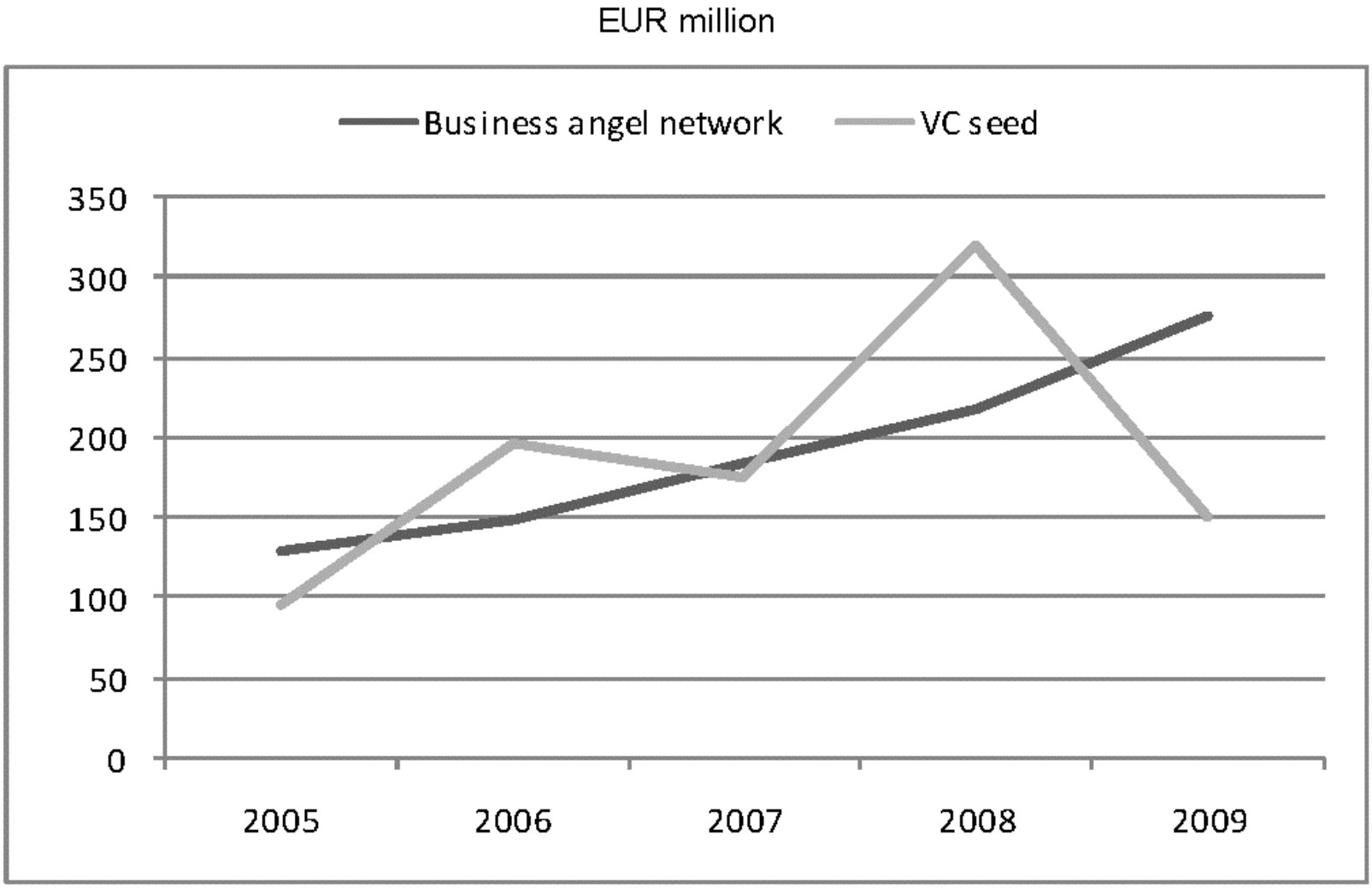
Source: OECD [2011]

Worldwide angel group investments



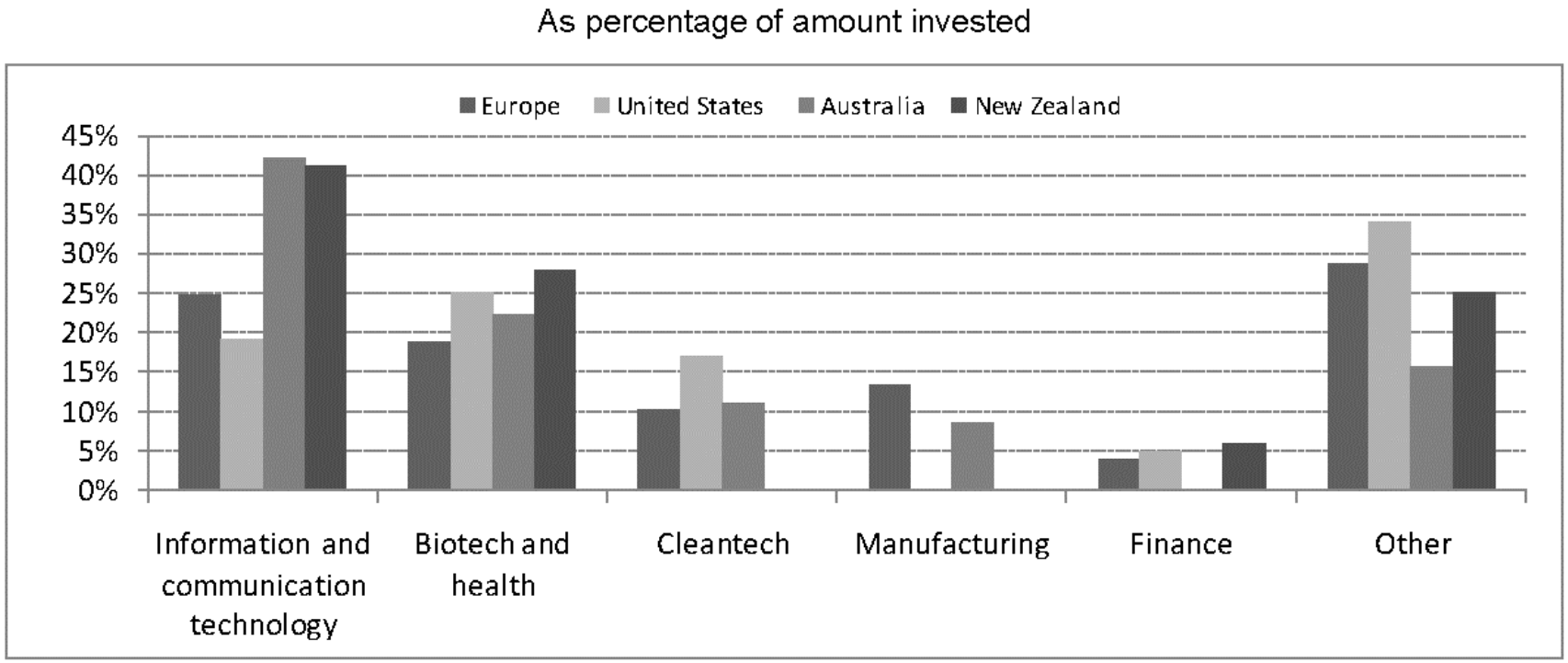
Source: OECD [2011]

Angel networks vs. VC in Europe



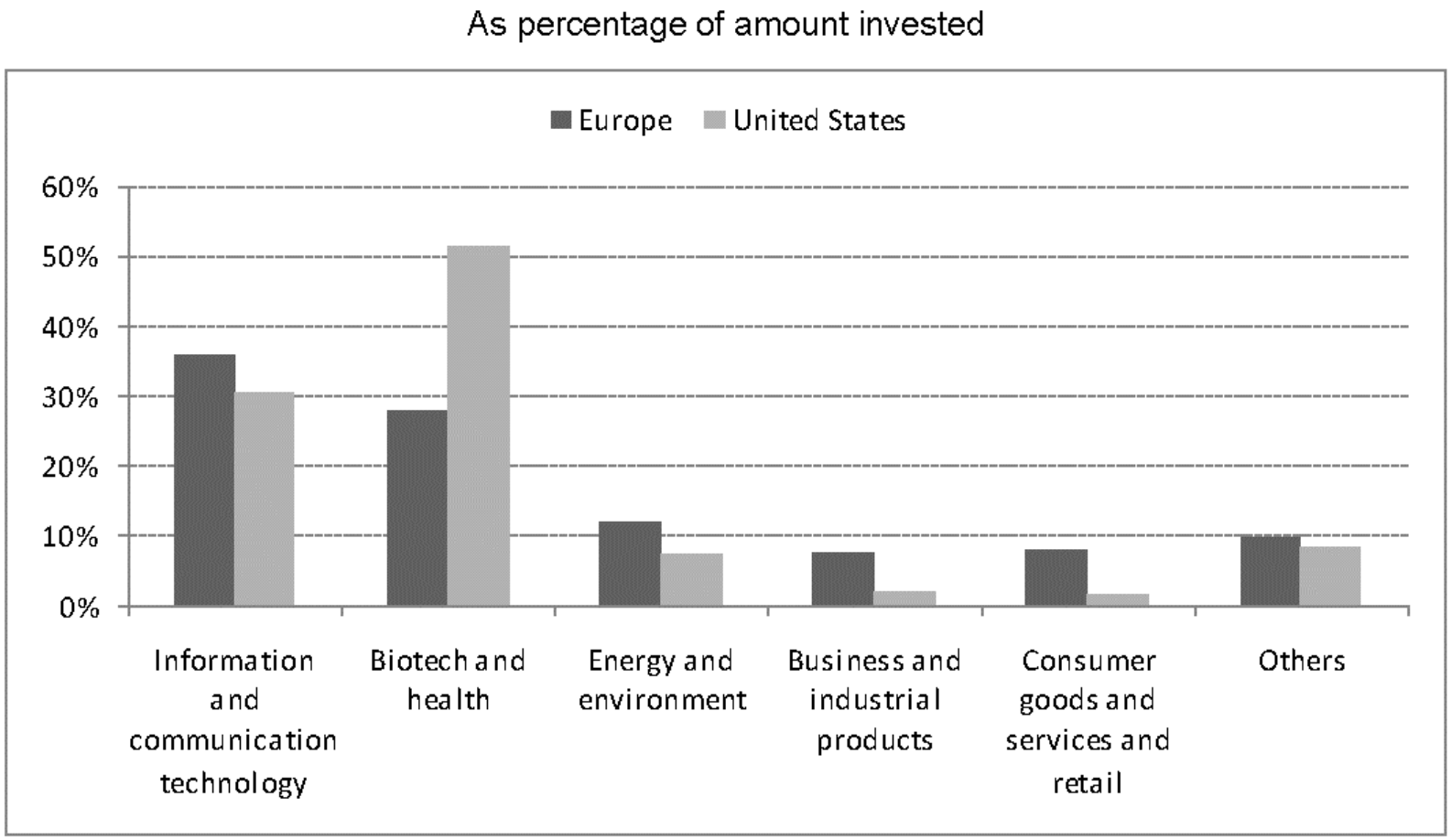
Source: OECD [2011]

Industry mix of angel investors



Source: OECD [2011]

Industry mix of VCs



Source: OECD [2011].

Evidence: Study of angel groups

- Study two angel financing *groups*:
  - Detailed documentation of deal flow, deliberations and venture outcomes
  - Formal votes and expressions of interest in deals
- Basic idea: compare ventures that just received funding versus those that just missed
  - Kerr, Lerner, and Schoar [2012]

Evidence (2)

- Improved venture success:
  - ✓ Survival 0.247 (0.095)
  - ✓ Successful exit: 0.075 (0.058)
  - ✓ Exit or 75+ employees: 0.088 (0.086)
- Improved venture operations:
  - ✓ Employee count: 12.4 (7.4)
  - ✓ Patent granted: 0.154 (0.089)
  - ✓ Improved web performance: 0.232 (0.120)
  - ✓ 38% improvement in web rank

Evidence (3): Returns

- Compare returns of one angel group (TCA) with those of VC groups
- Focus on cash-on-cash multiples—more readily aggregated
- Suggests angel group outperforms:
  - VC industry portfolio, 1997-2008 funds: 1.22X
  - Angel group's portfolio, 1997-2008 investments: 3.54X (without fees)
  - Angel group's portfolio, 1997-2008 investments: 2.71X (with "pseudo fees")

Incubators and accelerators

- Persistent efforts over the years.
- Failure of many efforts during dot com era.
- But little systematic evidence.
  - Will discuss in panel shortly.
  - Will look at innovative effort in for of Start-Up Chile later today.

Crowdfunding

- Centerpiece of JOBS Act policies:
  - May be able to help ease financing constraints
  - But will this be a case where there is "wisdom of crowds"?
  - And what about governance?
- Again, limited study

One pioneering study: The geography of crowdfunding

- Agrawal, Catalini and Goldfarb (2011)
- Data from "SellABand":
  - Almost 5000 artists received funding
  - Top 1% artists received 73% of total funding
- What roles does distance play?
  - Early investors mostly local (F&F)
  - For subsequent investors, distance irrelevant

PART 3: IMPLICATIONS FOR PUBLIC POLICY

The traditional challenge for governments

- Provide solid policy framework
  - Regulatory clarity
  - General tax policy
  - Legal system: Commercial litigation speed and clarity
  - Public market development
- Support for venture capital
  - Justify market failure
    - Growth, Employment, Innovation, Institution Building
  - Pick an instrument of support
    - Direct funding, indirect funding and tax credits

The new challenge

VC isn't the only game in town!

- What model do we support?
  - VCs
  - Angels: Individuals, Groups, Funds, Networks
  - Incubators
  - Others?
- How do you find out which model works best?
- How do these models interact?

With a little help from the latest management fad

- The Lean Start-up (Eric Ries):
  - Start with a hypothesis
  - Build Minimum Viable Product
  - Gather data
  - Confirm hypothesis => Build
  - Reject hypothesis => Pivot
- Can we have “lean policy makers”?

Building a hypothesis: Either support investments…

- Implemented with tax credits and co-investment funds
- Assumes that market failures pertain to initial matching and under-investments
- Subsidy more transparent:
  - Easy to value for investors
  - Easy to measure for policy makers and politicians
- Maybe be more effective for very early stages:
  - Information problems more severe
  - Power of incentives probably relatively lower

Building a hypothesis: … or support performance?

- Implemented with lower capital gains and lower corporate income taxes
- Assumes incentives work through two channels:
  - More effort towards value-creation
  - Better selection b/c better companies benefit more
- Subsidy requires forward looking behavior by investors and policy makers
- Maybe more appropriate for later stages:
  - Incentive effects more palpable

Building a hypothesis: Who should receive the support?

Supporting entrepreneurs?

- R&D tax credits

Supporting all investors?

- Investment tax credits

Supporting smart investors?

- Co-investment funds

Evidence on smart investors (1)

- VCs play active role in governance:
  - Lerner (1995)
  - Based on US data
- Obtaining VC associated with more commercialization & professionalization:
  - Hellmann and Puri (2000, 2002)
  - Based on data from Silicon Valley

Evidence on smart investors (2)

- Entrepreneurs willing to take lower valuations from higher ranked VCs:
  - Hsu (2004)
  - Based on data from the US dotcom boom
- VCs with prior industry experience provide more value-added services:
  - Bottazzi, Da Rin and Hellmann (2008)
  - Based on European data

Smart money and public policy

- Can bureaucrats identify smart investors?
- Can bureaucrats design systems to select smart investors?
- Should bureaucrats have discretion to pick smart investors?
- Can private investors undo government mistakes?
  - Bad scenario: crowding out
  - Good scenario: syndication between smart and subsidized investors

Do co-investment funds attract smart money?

- Scotland and New Zealand pioneered approach for angels
- Administrators decide which types of angels to give matching funds to:
  - Individuals, angel groups, funds, networks
  - Tricky issues!
- Government mostly a passive participant:
  - Limited due diligence and governance
- Government retains part of upside

Can governments create smarter money?

- For potential angels:
  - Support formation of angel networks
  - Training workshops for angels
- For potential entrepreneurs:
  - Commercialization grants (e.g., SBIR)
  - Training to prepare for investor meetings
- How much difference does this make?

Testing the hypothesis

- Basic questions are clear
  - What type of firms/investors use program?
  - How does program affect their performance?
- Yet basic answers are missing:
  - Data not properly collected
  - No attention to control groups
    - Discontinuity thresholds
  - Opportunities for controlled experiments
    - Randomized treatment
- Some questions are harder:
  - Interactions among investor types.
  - Interactions among programs.
  - Transferability of lessons from one context to another.

Conclusion

- VC model adapting to prolonged industry down-cycle
  - Public market outlook still not rosy
- Increased diversity of early stage funding sources:
  - Angel financing of growing importance
  - Angels communities are very heterogeneous
  - Experimentation beyond angels: accelerators & crowdfunding
- Diversity of funding sources poses new challenges for policy makers
- Time is ripe for “lean policy makers”!

THANK YOU!