

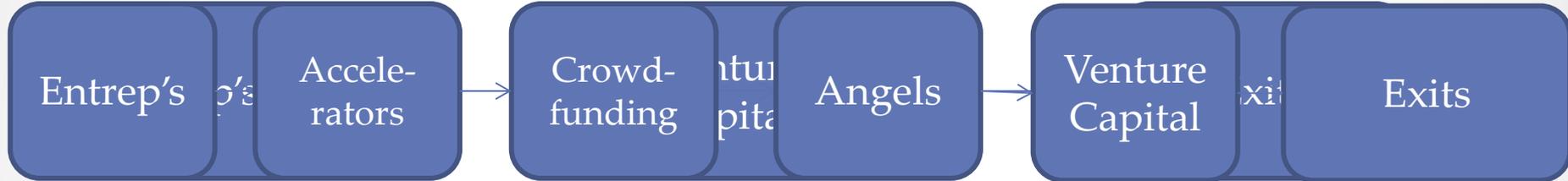
Divergent views on the role of government in entrepreneurial finance

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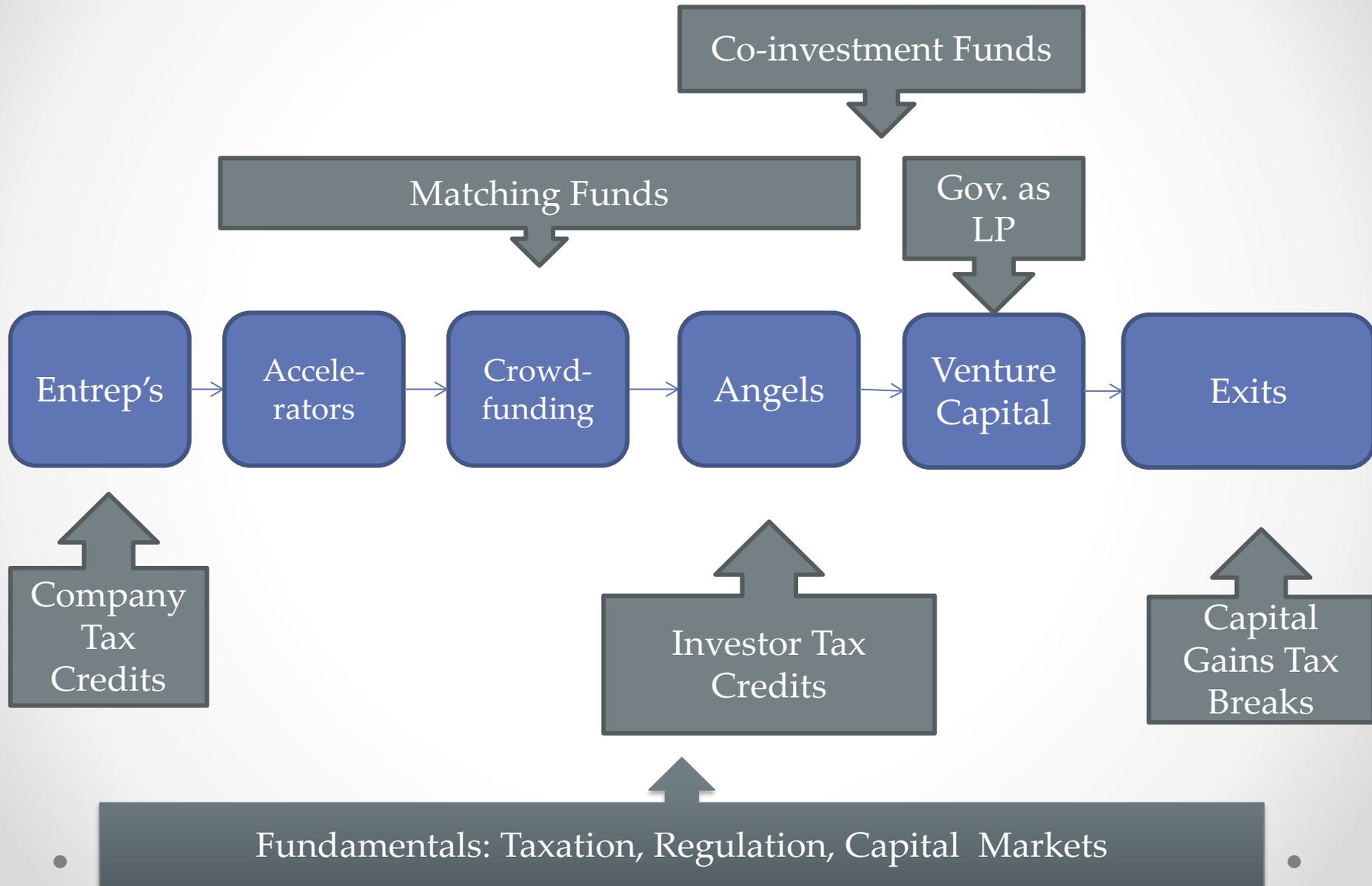
• Special thanks to Karen Wilson for her help with this presentation •

The Brave New World of Entrepreneurial Finance



What role of
government?

A Variety of Government Policies



Recent OECD Report

Wilson, K. and F. Silva (2013)

“Policies for Seed and Early Stage Finance: Findings from the 2012 OECD Financing Questionnaire”

OECD Science, Technology and Industry Policy Papers, No. 9, OECD Publishing.



Financing Instruments

(32 out of 34 OECD Member Countries Responding)

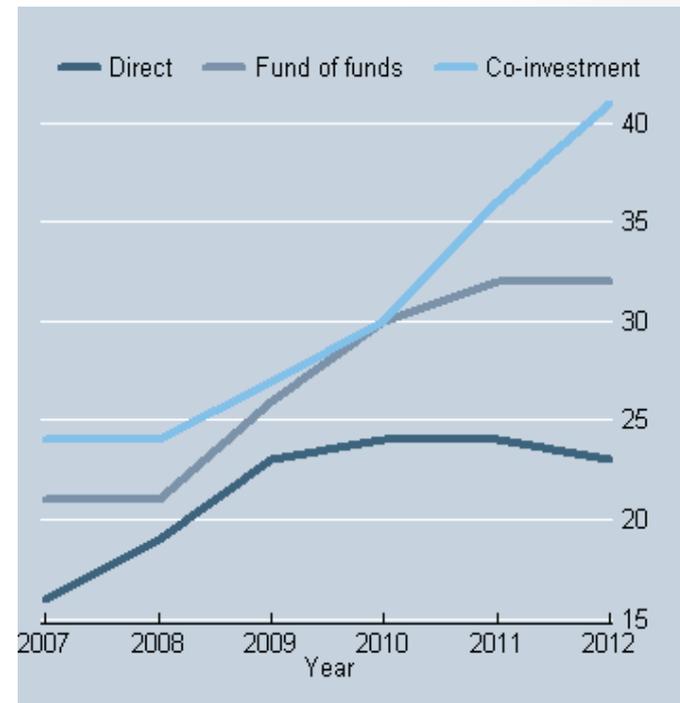
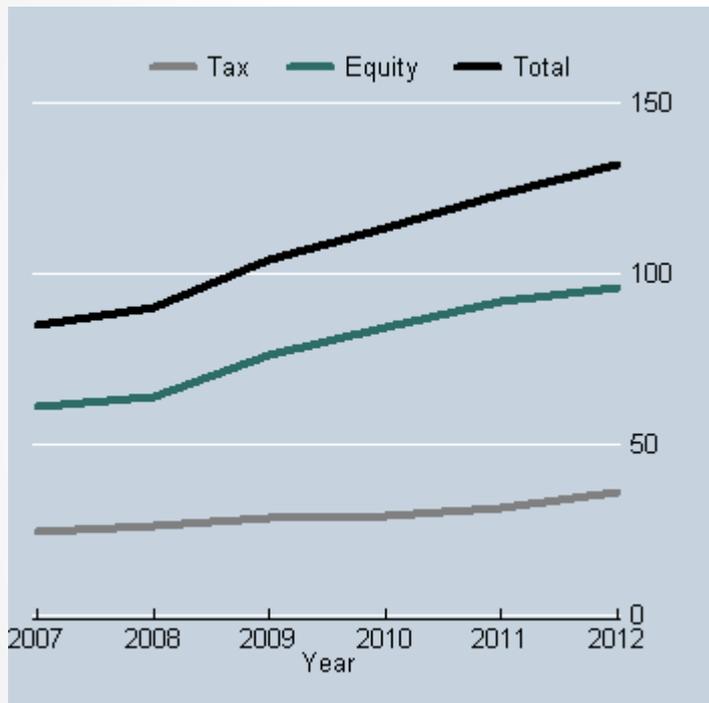
Type of Instrument	Number of OECD Countries	Change in Support (last 5 years)
Grants, Loans and Guarantees	30	Increased in 25 countries
Tax: YIC	9	New in 3 countries
Tax Incentives: Front-end	15	Increased or new in 9 countries
Tax Incentives: Back-end	12	Unchanged in most
Equity Funds: Public	14	Increased in 7 and new in 3 countries
Equity : Fund-of-Funds	21	Increased in 8 and new in 8 countries
Equity Funds: Co-Investment	21	Increased in 11 and new in 6 countries

Source: Wilson, K. and F. Silva (2013) "Policies for Seed and Early Stage Finance: Findings from the 2012 OECD Financing Questionnaire" OECD Science, Technology and Industry Policy Papers, No. 9, OECD Publishing.

Number of Tax & Equity Instruments (2007-2012)

Equity relative to tax instruments

By type of equity instrument



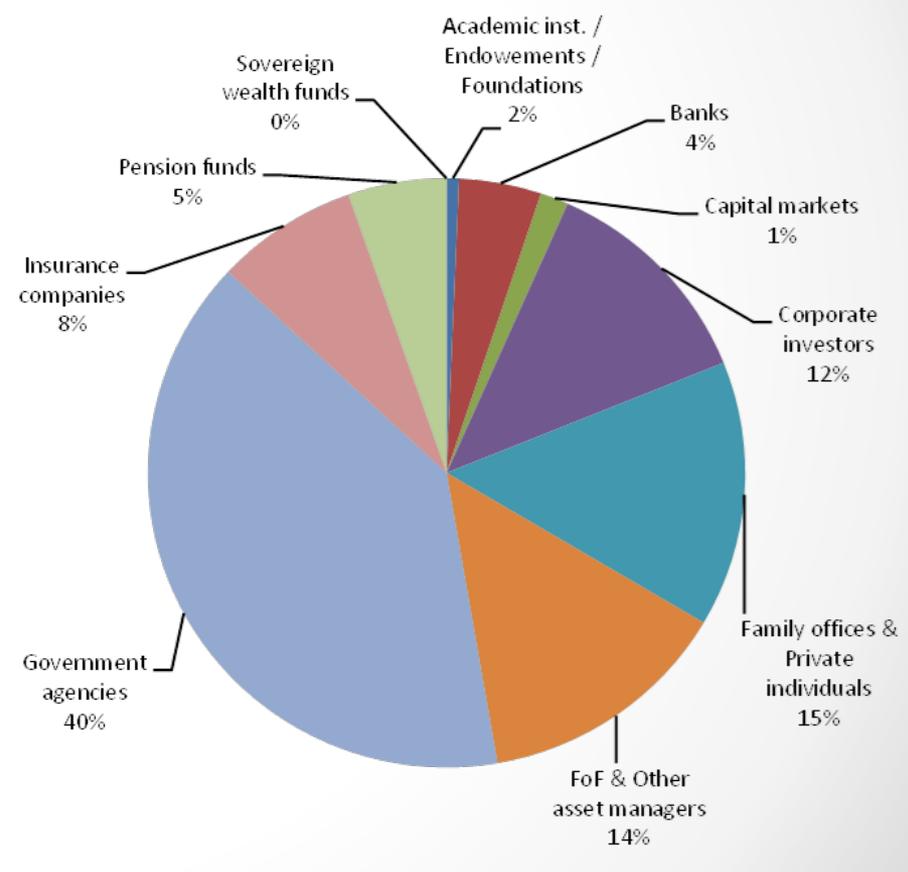
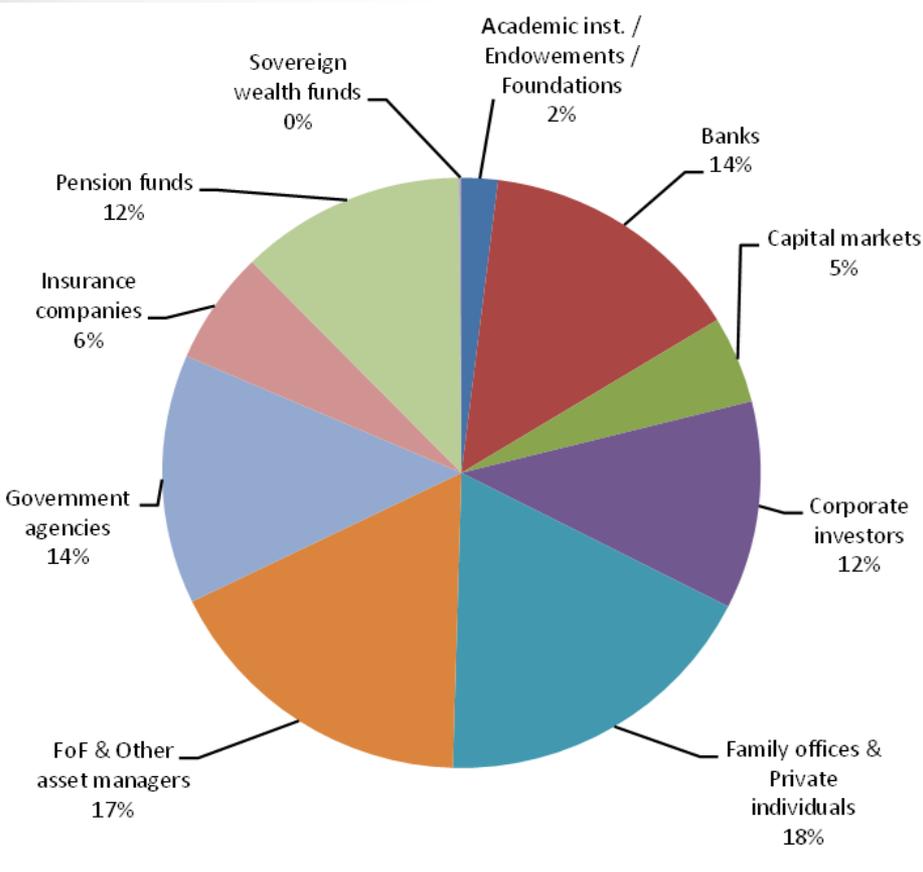
Note: These statistics do not reflect amounts committed or invested through the programmes.

Growing Role of Government

Venture Funds Raised in Europe by Type of Investor

2007 — Total EUR 8.3B
3.8B early stage

2012 — Total EUR 3.6B
2.0B early stage



Note: 2007 vs. 2011 – Incremental amount raised during the year as a percentage of total amount

Source: EVCA PEREP Analytics.

Some Overarching Questions

- Does government VC crowd out private VC?
 - Global evidence doesn't support crowding out hypothesis
 - Brander, Hellmann and Du, 2013
- Emerging consensus that some government support of VC warranted
 - ... but how much is too little or too much?
- What type of support works best?
 - For whom? VC, New Kids in Town
 - Multitude of Approaches
- Divergent views on how to support venture capital!
 - Let's look at the evidence!
- Based on: James Brander, Qianqian Du and Thomas Hellmann (November 2013), "The Effects of Government-Sponsored Venture Capital: International Evidence", forthcoming, Review of Finance

A Missing Link: Program Evaluation

Table 10. Types of evaluations of tax and equity instruments for seed and early stage financing**

	Programmes Evaluated	Internal	External-government	External-Other
Australia	✓			IIF; PSF
Austria				
Belgium	✓		YIC	ARK
Canada	✓		SR&ED	
Chile				
Czech Republic				
Denmark	✓		VF	IM
Estonia				
Finland	✓			FII
France	✓	MEF; CDC	JEI	
Germany	✓			HTG
Greece				
Hungary				
Ireland	✓	EII; SCS		HPSU
Israel	✓			
Italy				
Japan				
Korea				
Mexico				
Netherlands	✓			BPSV
New Zealand	✓	VIF		
Norway	✓			NSCS
Poland				
Portugal				
Slovak Republic				
Slovenia				
Spain*				
Sweden	✓		Almi; IF	
Switzerland*				
Turkey				
United Kingdom	✓			EIS; UKIIF; ECF&CFEL
United States				

*Note: The following countries do not have seed and early stage tax or equity policies at the national level: Spain Switzerland; United States. Iceland and Luxembourg did not complete questionnaires and therefore are not included in the table.

** Please refer to the electronic version of this document for links to these evaluations.

Challenges in program evaluation

- Initial design flaws for data collection
- 'Big data' revolution
- What do you want to measure?
 - Investments
 - Value creation, exits
 - Job creation (count job years, not jobs)
 - Ecosystem effects
 - Program efficiency
- Control groups
 - Essential for proving additionality!
- Program interactions hard to disentangle
 - Quasi-natural experiments
 - Randomized trials
- Lean policy makers need timely information



A Framework for Assessing Policy Tools

1. Objectives
2. Supply or Demand-side intervention
3. Time horizon
4. Company-based vs. investor-based programs
5. Front-end vs. back-end programs
6. Rule vs. discretion
7. Local vs. 'foreign'



1. Program Objectives

- Underlying market failure
 - Institution building
 - Financial market imperfections
 - Innovation externalities
- Objectives
 - Jump-start ecosystem
 - Support job creation
 - Support innovation and change
- Government willingness to pay
 - If high: subsidize
 - If low: revenue-neutral & self-sustaining

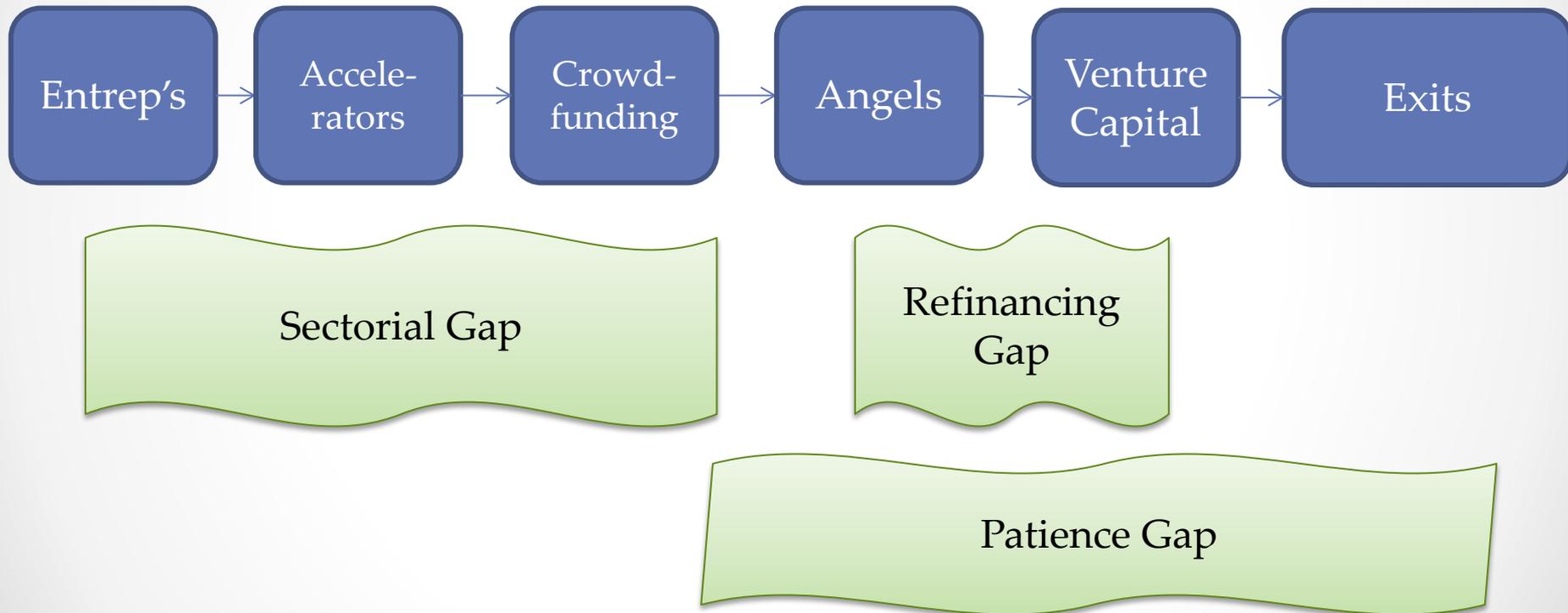


2. Supply-side vs. Demand-side approaches

- Supply-side gets most attention
 - Assumption of financial market failure
- Demand-side program on the rise
 - Assumption of missing knowledge & institutions
 - Most programs inexpensive
- Entrepreneurship Training
 - OECD wide increase in government program
 - Training on “investor readiness” and “funding sources”
- Investor Training
 - More rare, NZ pioneer
- Promotion of social networks
 - OECD wide increase in government program
 - Incubators & Accelerators; Business angel networks; Matchmaking

• Source: Wilson, K. and F. Silva (2013) “Policies for Seed and Early Stage Finance: Findings from the 2012 OECD Financing Questionnaire” OECD Science, Technology and Industry Policy Papers, No. 9, OECD Publishing.

Role of Government: Filling New Market Gaps



3. Patience Gap:

Two Models of Experimentation

- Quick resolution
 - Many simultaneous independent trials
 - Early signals informative
 - Quick termination of losers
 - Patience is a vice!
- Slow resolution
 - Many sequential interdependent trials
 - Early signals uninformative / misleading
 - Tolerance for failure needed
 - Patience is a virtue!

Evidence from Life Science Research

- Howard Hughes Medical Institute (HHMI) Grants
 - Rewards long-term success
 - Tolerance for early failure
- National Institutes of Health Grants
 - Short review cycles
 - No tolerance for failure
- Effect on research performance
 - HHMI recipients have more publication “flops”
 - HHMI recipients have more publication “hits”
 - HHMI recipients generate more novel research

Path-breaking innovation requires
long-term horizons & tolerance for failure!

Evidence from VC

- Financing risk: availability of follow-on funding
 - Less financing risk in “hot” VC markets
- How does this affect VC deal selection?
- Evidence on hot market deals
 - Lower probability of IPO
 - Higher valuation in case of IPO
 - Successes are more innovative (more patents, more citations)
- Effects strongest for most experienced VCs

Reduction in financing risk
encourages experimentation

Does the new market structure foster experimentation?

- New Kids In Town well-suited for “quick resolution” experimentation
- Traditional VC model partially suited for “medium slow resolution” experimentation
- New Kids In Town seems poorly suited for “slow resolution” experimentation
 - Funding of complex technologies
 - Funding of capital intensive projects

Implications for policy

- Time horizon of company funding
 - Encourage which type of experimentation?
 - What tolerance of failure?
- Time horizon of program itself
 - Lean policy maker!
 - When / how do you terminate program



4. Company-based vs. Investor-based programs

- Company-based: available to all companies
 - R&D Tax credits, Small/Young business tax breaks
- Investor-based: conditional on equity investment
 - Co-investment funds, Investment tax credits
- Broad vs. pre-screened?
- Trickle-down: Do investor tax credits lead to
 - Larger investments to same set of companies
 - Investments in more companies
 - Higher returns to entrepreneurs (i.e., lower valuations)
 - Higher returns to investors
 - ◦ What about trickle up?

5. Front-end vs. back-end

- Front-end: Push logic
 - Increase investment amounts
 - Reduce cost of investment
 - Fund & Fund-of-funds approaches: EIF & Canada
 - Co-investment funds: NZ, Scotland
 - Tax-credits: US, UK, BC
- Back-end: Pull logic
 - Reduce capital gains
 - Encourage re-investment
 - UK EIS system
 - US Capital Gains Tax Relief for Small Business Investments

Which is better?

- Advantages of back-end incentives
 - Selection effects
 - Incentives
- Advantages of front-end incentives
 - Myopic investors
 - Encourage experimentation
- Political economy often favors front-end!

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6. Rule-based vs. Discretionary programs

- Rule based: (e.g. Tax Credits)
 - Eligibility criteria
- Discretionary programs
 - Who are the decision makers?
 - Private or public
 - What are their objectives?
 - Profit or other
 - What decisions need to be made
 - Investment selection and amounts
 - Syndication partners
 - Re-investment decisions

Pros and cons of rule- vs. discretion-based programs

- Rules-based Pro:
 - Transparency and Fairness
- Rules-based Con:
 - Gaming of system
- Discretion- based Pros:
 - Quality control
 - Potential for value-adding investing
- Discretion- based Cons:
 - Inability of government to pick winners
 - Open to political abuse
 - ...especially in countries with weak institutions

7. Local vs. distance investors

- Long-standing observation that venture financing a local business
- Recent evidence using “quasi-natural” experiment of reduced air travel time
 - Having closer VCs improves exit probability
 - Having closer VCs improves innovation measures
 - Number and quality of patents

But distant investors play important role

- In Crowdfunding distant investor abound; local investors matter mostly at the beginning of campaign
 - Agrawal et al. (2011)
- In US, VC networks help overcome distance issues
 - Sorenson and Stuart (2001)
- In International VC, syndicates of local and distant investors achieve best exit performance
 - Chemmanur et al. (2011)

Based on: Sorenson, O., Stuart, T. (2001). "Syndication networks and the spatial distribution of venture capital investments". *American Journal of Sociology* 106, 1546-1588; Ajay Agrawal, Christian Catalini and Avi Goldfarb, 2011 "The Geography of Crowdfunding" NBER Working paper 16820; and Chemmanur, T., Hull, T., Krishnan, K., 2011. "Do local and international

- venture capitalists play well together? A study of international venture capital investments". Unpublished working paper. ●

Recent evidence from angel investing

- BC angel investment data
- More distant investors achieve higher returns
 - Higher investment hurdle
 - Effect stronger for one-time angels
- Comparing Vancouver versus rest of BC
 - Vancouver investors achieve higher returns
 - Vancouver companies achieve lower returns
- Reconcile evidence?
 - Close investors provide monitoring
 - Distant investors provide alternative resources
 - Distant investors impose greater up-front discipline
- Based on: Dan Vo, 2013, The Geography of Angel investment, PhD Thesis, University of Victoria

Implications for public policy design

- US & Canada
 - Angel initiatives at regional not federal level
- Evidence from OECD
 - 58% of programs require domestic company headquarters
 - 34% allow for investment abroad
 - 37% have within-country regional restrictions
- US: Minnesota versus Wisconsin
- Reasons for allowing foreign companies
 - Economic impact remains local
 - Attract foreign entrepreneurs
- Reasons for allowing foreign investments
 - Investment relationships based on reciprocity
- Foreign investment permissions most important for VC funds and Fund-of-Funds



A Simplified Framework

Type of Program	Cost to Government	Conditional on investor	Front- or back-end	Rule or Discretion
Government (Fund-of-) Funds	Low in long term	Yes	Front-end	Discretion
Co-investment funds	Low in long term	Yes	Front-end	Discretion
Matching funds	Low in long term	Yes	Front-end	Rule
R&D tax credits	High	No	Front-end	Rule
Investment tax credits	High	Yes	Front-end	Rule
Capital gains tax breaks	High/ Delayed	Yes or No	Back-end	Rule

A Simplified Framework

Type of program	Cost to Government	Conditions	Front- or back-end	Rule or Discretion
Government (Fund of...)				Discretion
Co-investor funds				Discretion
Matching			Back-end	Rule
R&D tax credits	High		Front-end	Rule
Investment tax credits	High	Yes	Front-end	Rule
Capital gains tax breaks	High Delayed	Yes or No	Back-end	Rule

Divergent
Views on
What is Best

Let's Debate!



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