

Sustainable Finance

<https://www.houseoffinance.se/shof-mfs-conference-sustainable-finance-august-20-21-2018/>

August 20, 2018

IVA Conference Center, Stockholm

IMPACT INVESTING

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Sustainable Finance Conference

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IMPACT INVESTING

Monitor group:

“... actively placing capital *in businesses and funds* that generate social or environmental good and at least *return nominal principal* to the investor”

Very different from SRI

Very different from philanthropy

Mapping Sources of Capital to Impacting Investment

I am going to use a graphic to flow from topics for this talk.

- I. Landscape of impact opportunities
 - Categorization
 - Characterize impact funds
 - What do we know about returns?
- II. Sources of capital: Who has a willingness to pay & why?

CAPITAL

VEHICLE

LABEL

RETURNS

Philanthropy

Impact Investment

For-Profit Impact
Sector VC, SRI

Impact Investment (Broad Definition)

Social

Investment
Returned

Financial



Mapping Sources of Capital to Impacting Investment

I. Landscape

- Providers of investment opportunities like to define Impact Investing broadly.
 - This is disservice to owners of capital who want and need to understand their return profile.
 - Allows funds to bundle investments
- To understand:
 - Let's look at the sources of capital...

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Mapping Sources of Capital to Impacting Investment

Foundations

Household
& Wealthy

Government/
NGOs

State
Pensions

Other long
horizon investors

Let's keep our sources of capital (above) simple for now.

Imagine many opportunities that just market themselves as a bundling of impact returns and financial returns.

Fiduciary duty investors above (in green) cannot invest.

Thus, investment opportunities emerge with more precise labels

Impact Investment (Broad Definition)



CAPITAL

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RETURNS

These have negative expected returns.

These have lower than market expected returns.

Grants

Venture Philanthropy, Subsidized Loans (Negative Return)

Social Impact/Mission Funds, Development Bonds

Double Bottom Line VC, Green Bonds, SRI allowing tradeoff

Impact Sectors VC, SRI Funds

Philanthropy

Impact Investment

For-Profit Impact Sector VC, SRI

Impact Investment (Broad Definition)

Social

Investment Returned

Financial

CAPITAL

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RETURNS

These aim only for financial returns (i.e., no social return concern beyond the “goodness” of investing in “good” sectors)



Grants

Venture Philanthropy, Subsidized Loans (Negative Return)

Social Impact/ Mission Funds, Development Bonds

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Impact Sectors VC, SRI Funds

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For-Profit Impact Sector VC, SRI

Impact Investment (Broad Definition)



Social

Investment Returned

Financial

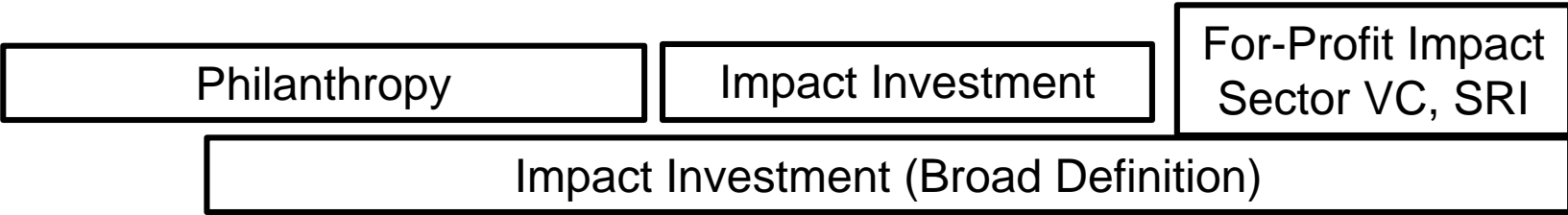
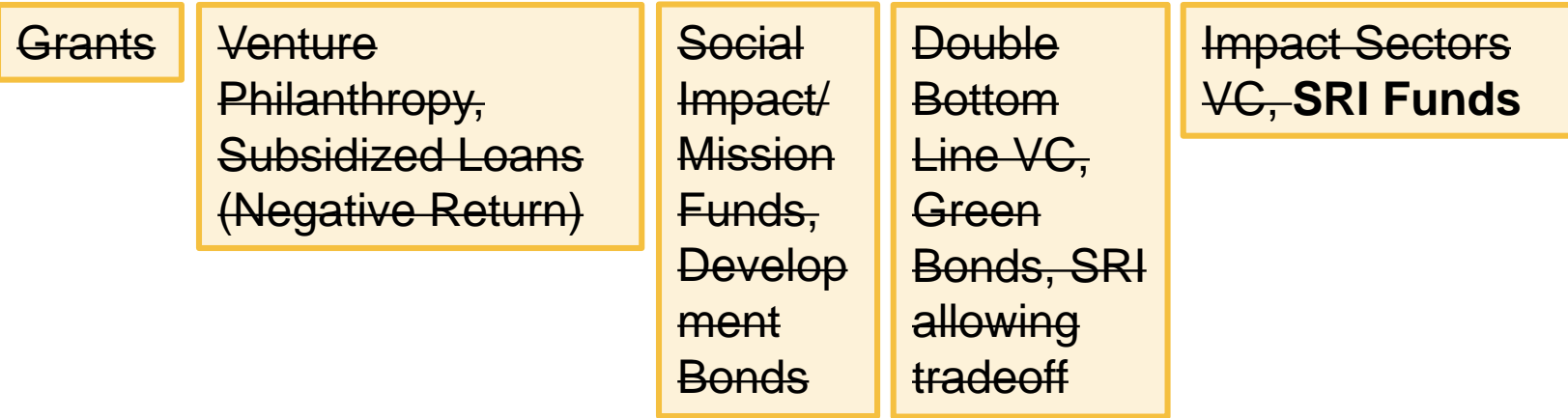
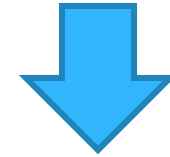
CAPITAL

VEHICLE

LABEL

RETURNS

Observation 1: The vast, vast majority of capital is here



CAPITAL

VEHICLE

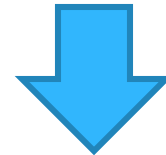
LABEL

RETURNS

Observation 2: As Laura Starks has probably already said, these have performed more or less at market over the last couple of decade.

How? (we don't know):

- A “goodness” factor being incorrectly priced (seems unlikely, but maybe)
- ESG investing loading on priced factors
- ** New disclosure on the quality of companies emerging in ESG process.
 - governance literature
 - Alex Edmans on labor



Impact Sectors
VC, SRI Funds

VEHICLE LABEL RETURNS

Philanthropy

Impact Investment

For-Profit Impact Sector VC, SRI

Impact Investment (Broad Definition)



Social

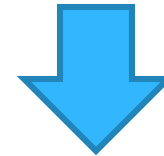
Investment Returned

Financial

Observation 3: Regulators should require retail SRI mutual funds with intentional trade off to label themselves differently.

... hard: positive versus negative screening, portfolio materiality of exclusions, loss of diversification, etc.

... also of concern: FinTech startups for millennials which have double layers of transaction costs to provide platform-like SRI opportunities



Double Bottom Line VC, Green Bonds, **SRI allowing tradeoff**

Impact Sectors VC, **SRI Funds**

Philanthropy

Impact Investment

For-Profit Impact Sector VC, SRI

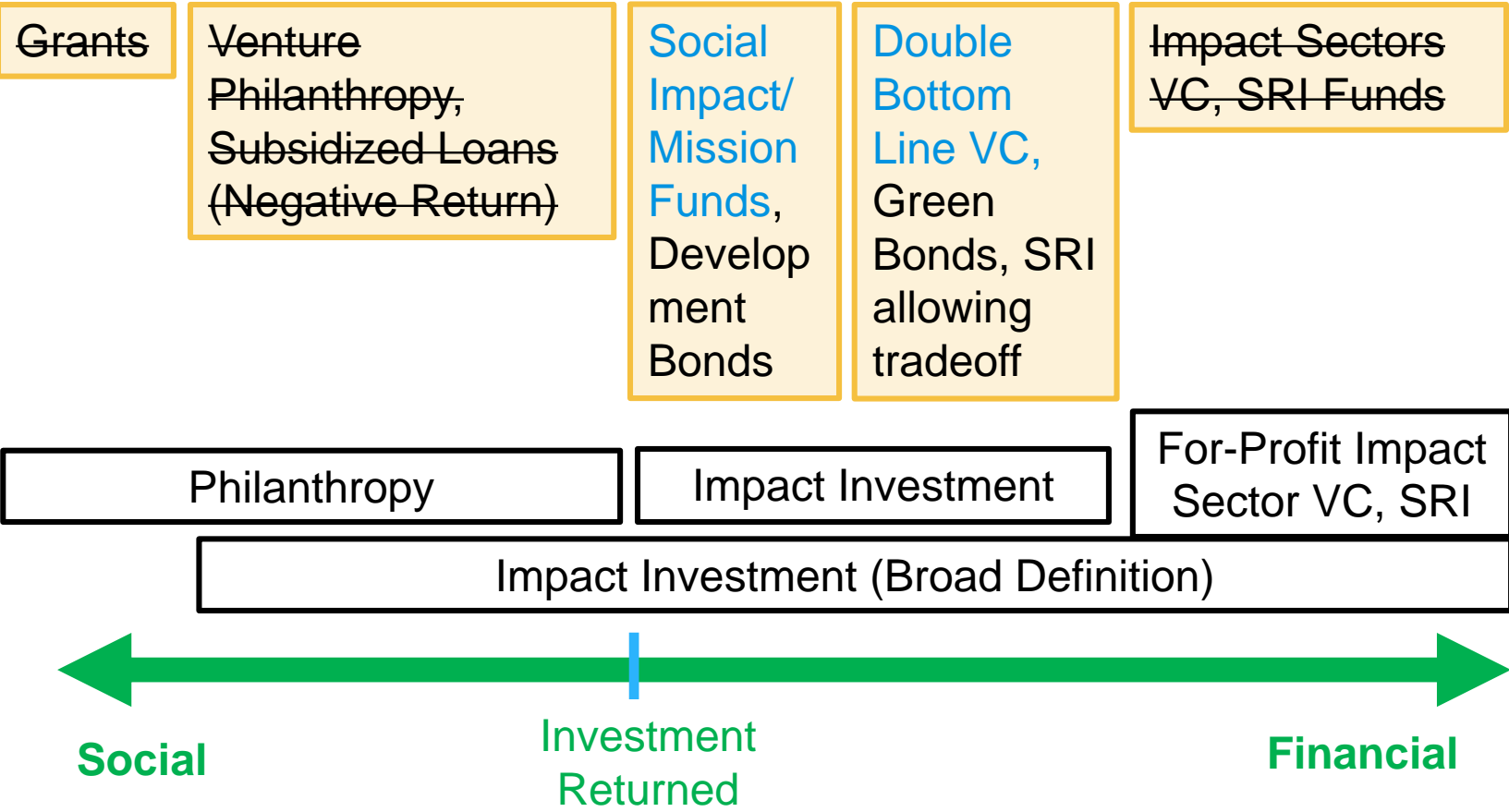
Impact Investment (Broad Definition)



VEHICLE LABEL RETURNS

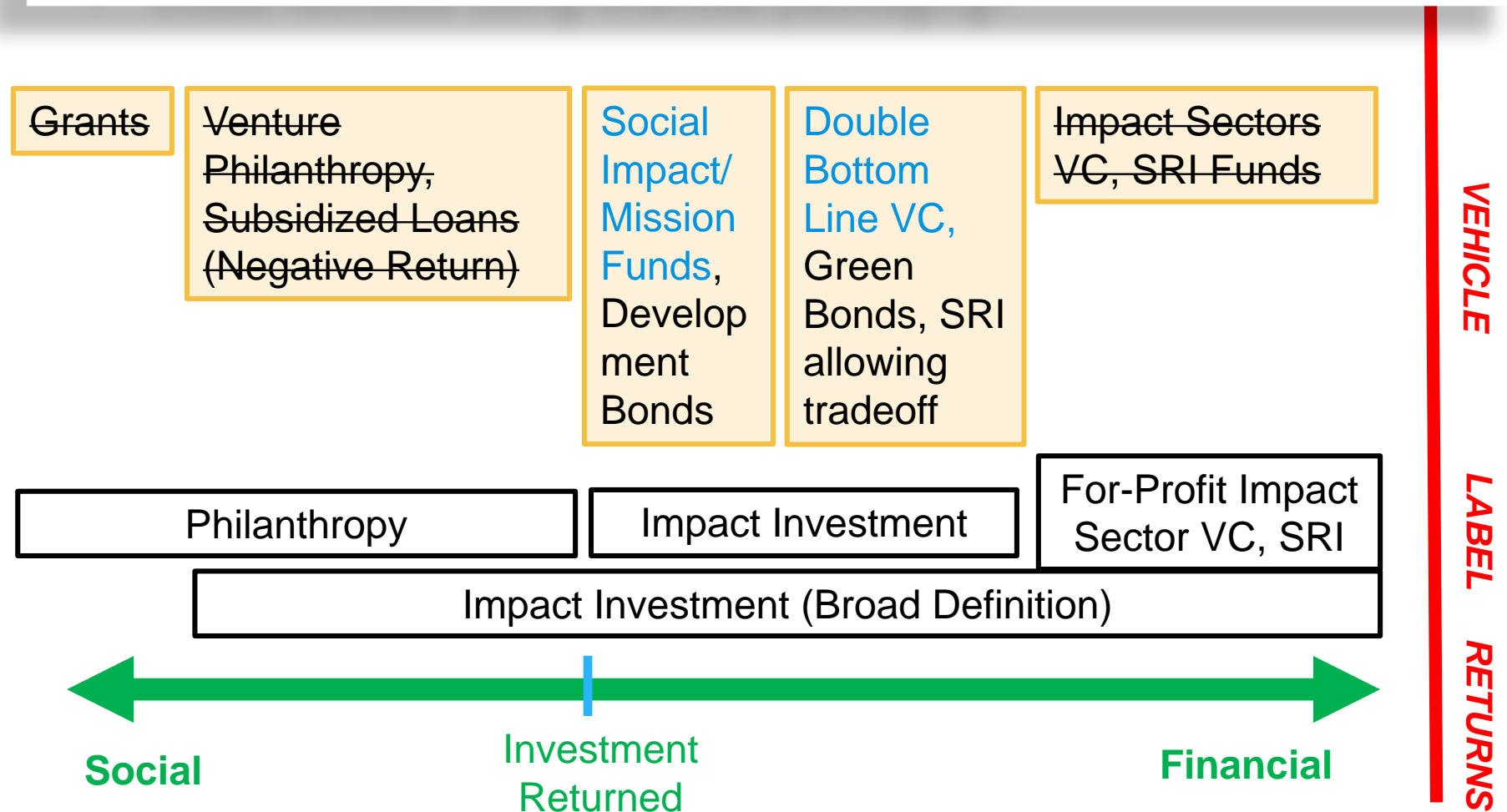
Impact Investing: Under the definition here, capital owners know they are investing in an instrument with a tradeoff

- I'll ignore debt and the tradeoff SRI funds for the rest of the talk and focus on **impact VC funds**



Question 1: What is the wiliness-to-pay in returns for impact, if any?

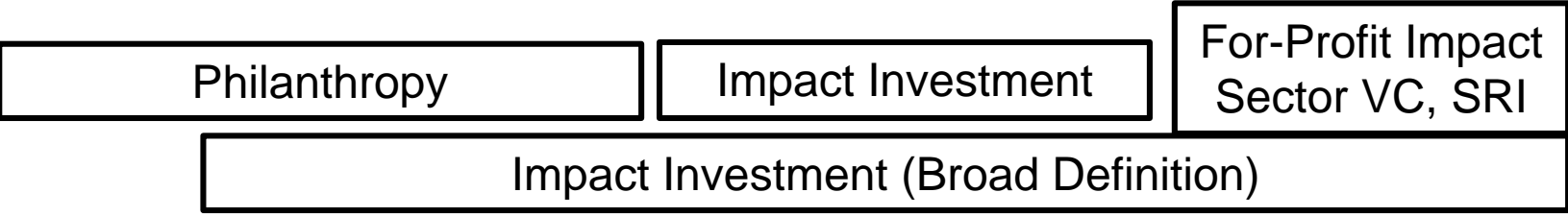
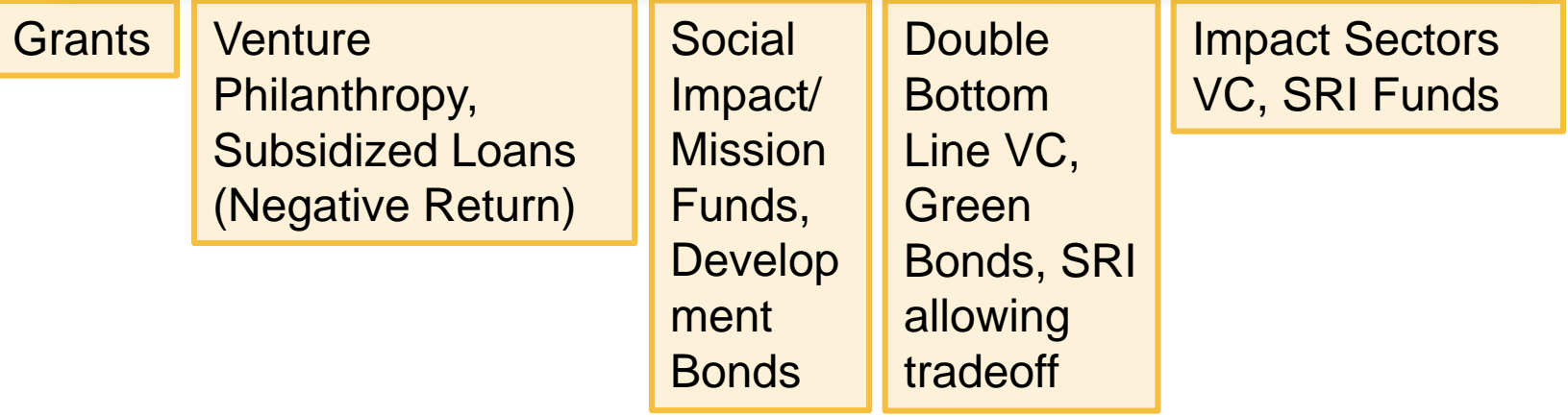
- Important to know whether there is demand for hybrid startups with dual objective
 - Advantage: loading equity incentives on philanthropic agenda
 - Could recreate using financial packaging?





Question 2: Who is willing to pay?

- If drawing arrows from above, which go to tradeoff?



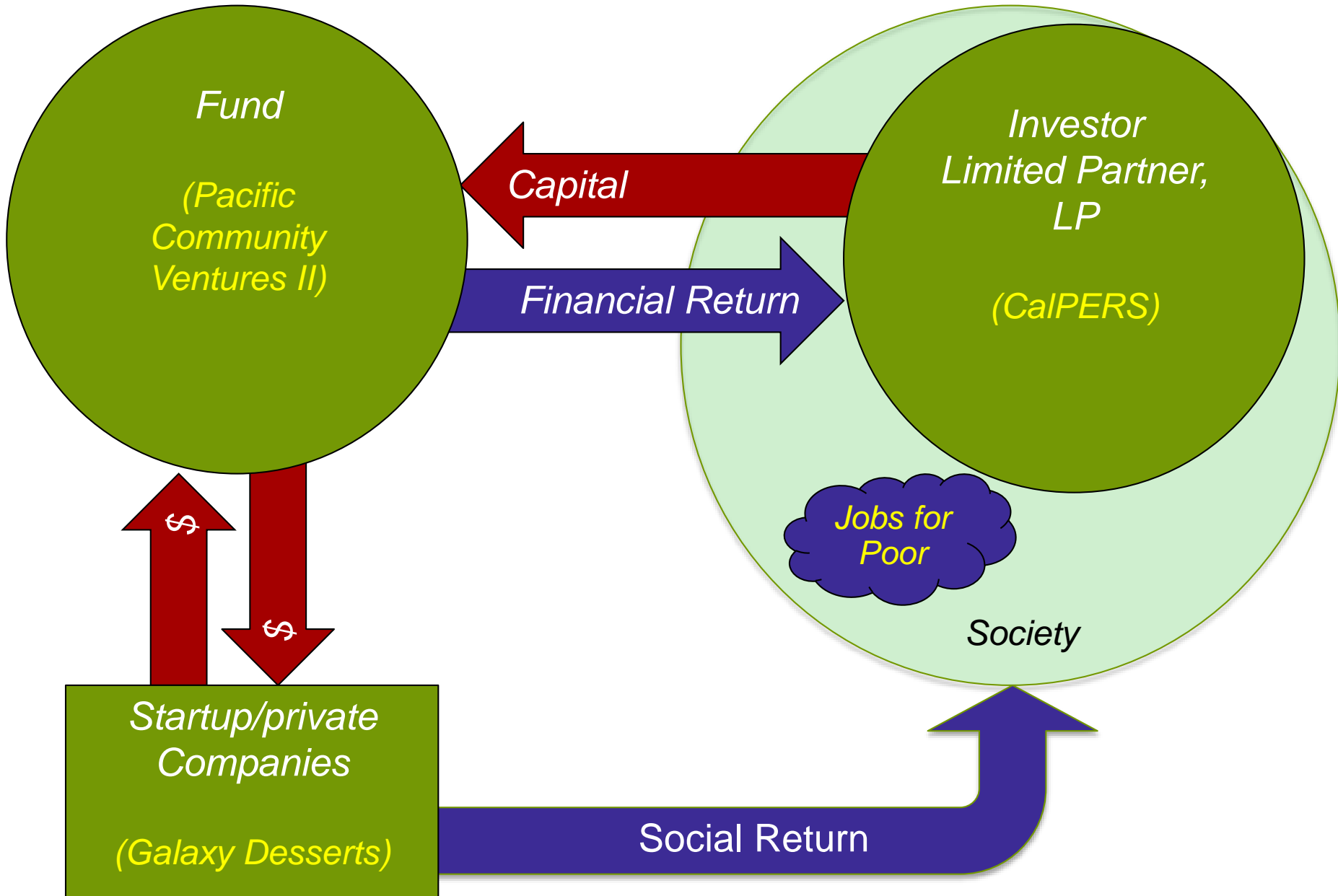
CAPITAL
 VEHICLE
 LABEL
 RETURNS

Rest of the talk is from:

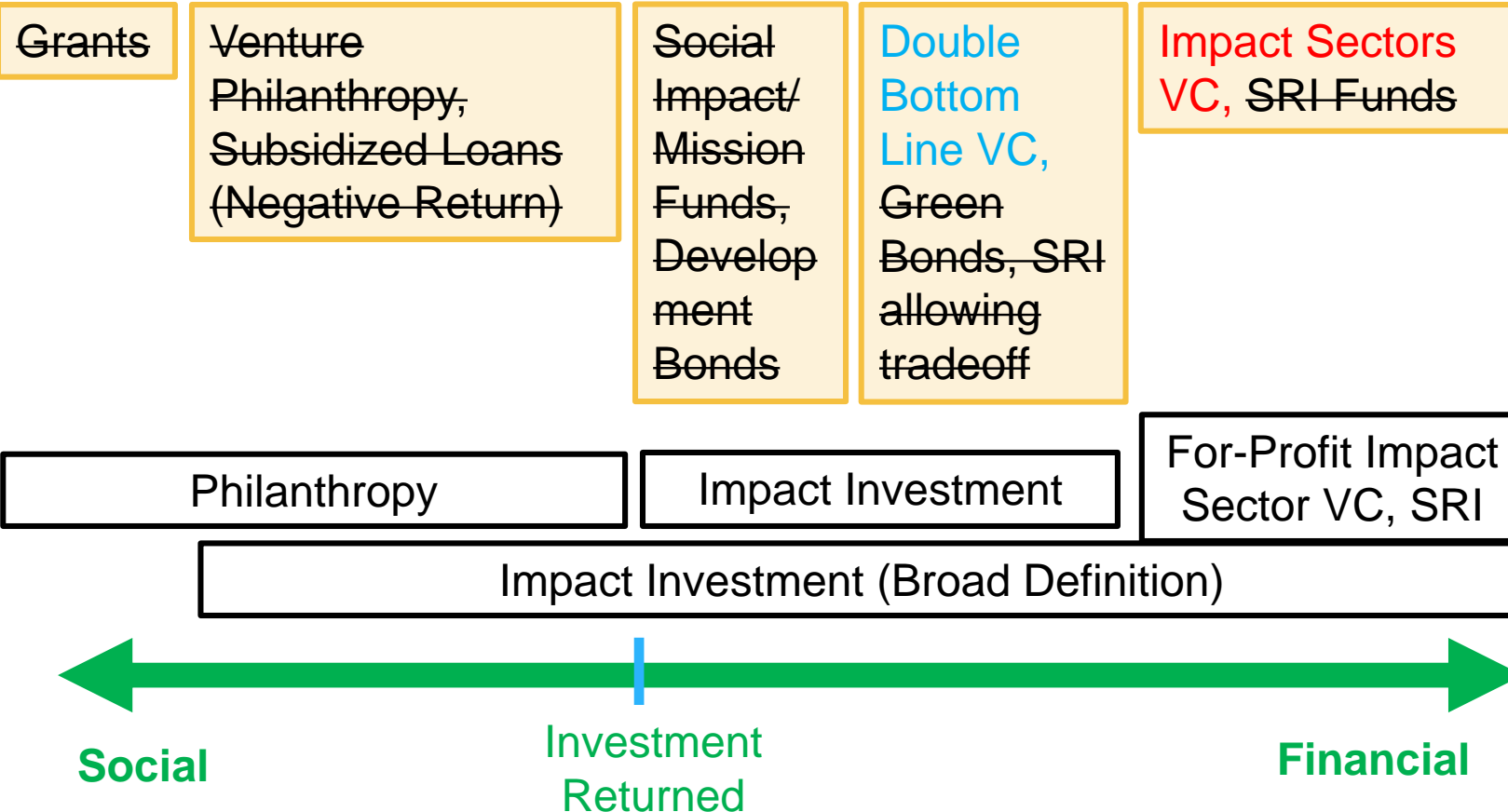
“Impact Investing” with Brad Barber & Ayako Yasuda

- Winner of the 2016 Moskowitz Prize
- Study Impact funds with explicit dual objectives in order to uncover willingness to pay
 - And to answer: Who has the willingness to pay
 - Note: willingness does not have to be an explicit utility over social goods

Impact Funds



Spent a couple years of effort to eliminate Impact Sector VC funds (red below) that are strictly for profit



Data Example: Impact Funds and LP Investors

Bridges Ventures

“Bridges Ventures is a UK-based private equity firm with **the aim of combining financial returns with social and environmental impact**

Limited Partner Investors (LPs) in Bridges:

3i (Institutional Asset Manager)

All Souls College Oxford (Endowment)

Department for Business Innovation & Skills (Government)

HSBC Group (Bank)

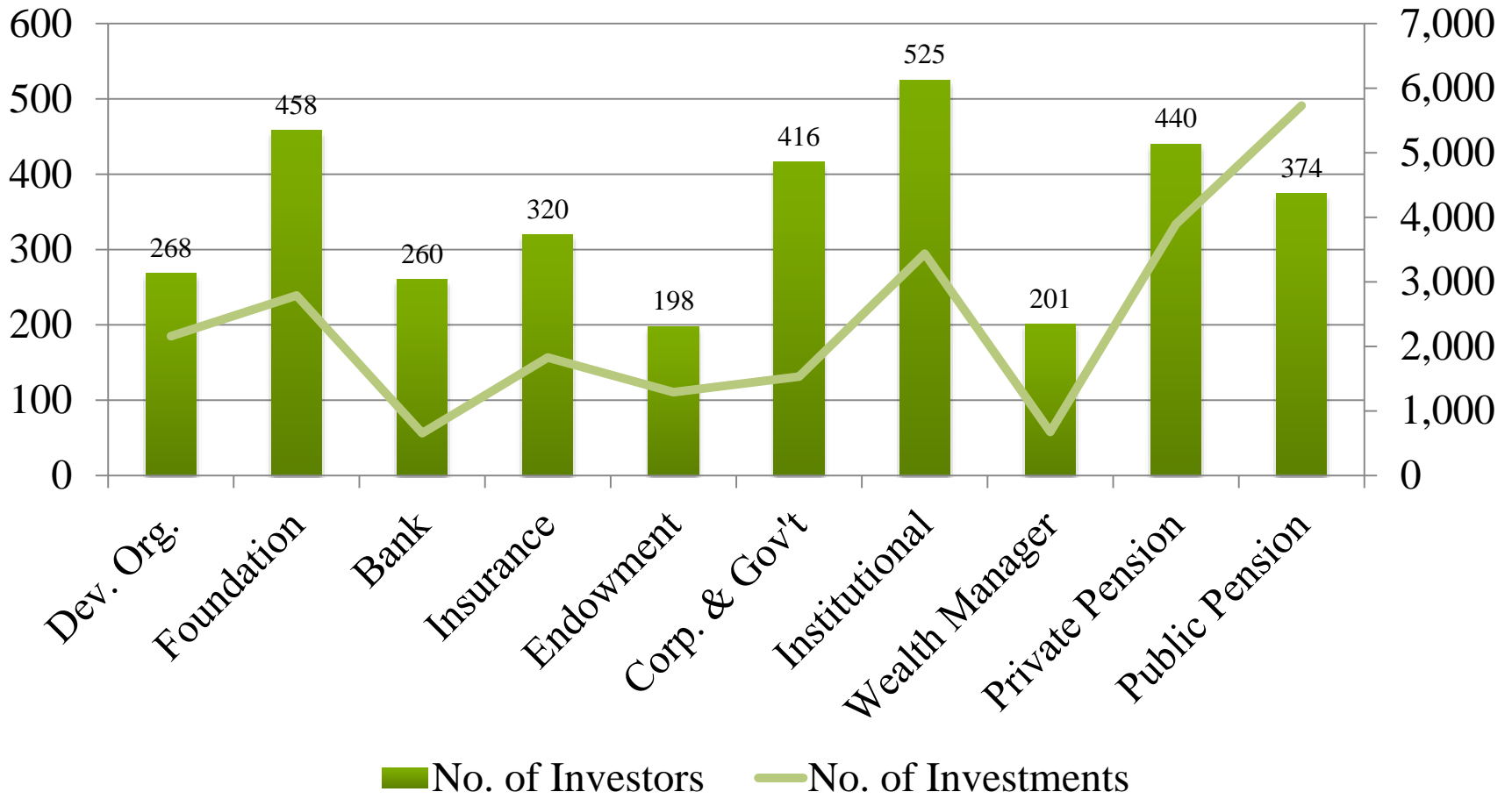
Barclays Bank (Bank)

South Yorkshire Pensions Authority (Public Pension)

Shine Trust (Foundation)

Wittington Investments (High Net Worth Family)

Number of Investors (Investments) by Limited Partner (LP) Investor Type



Fund Descriptive Statistics:

Preqin Data Covering 3,500 LP investors from 1995-2014

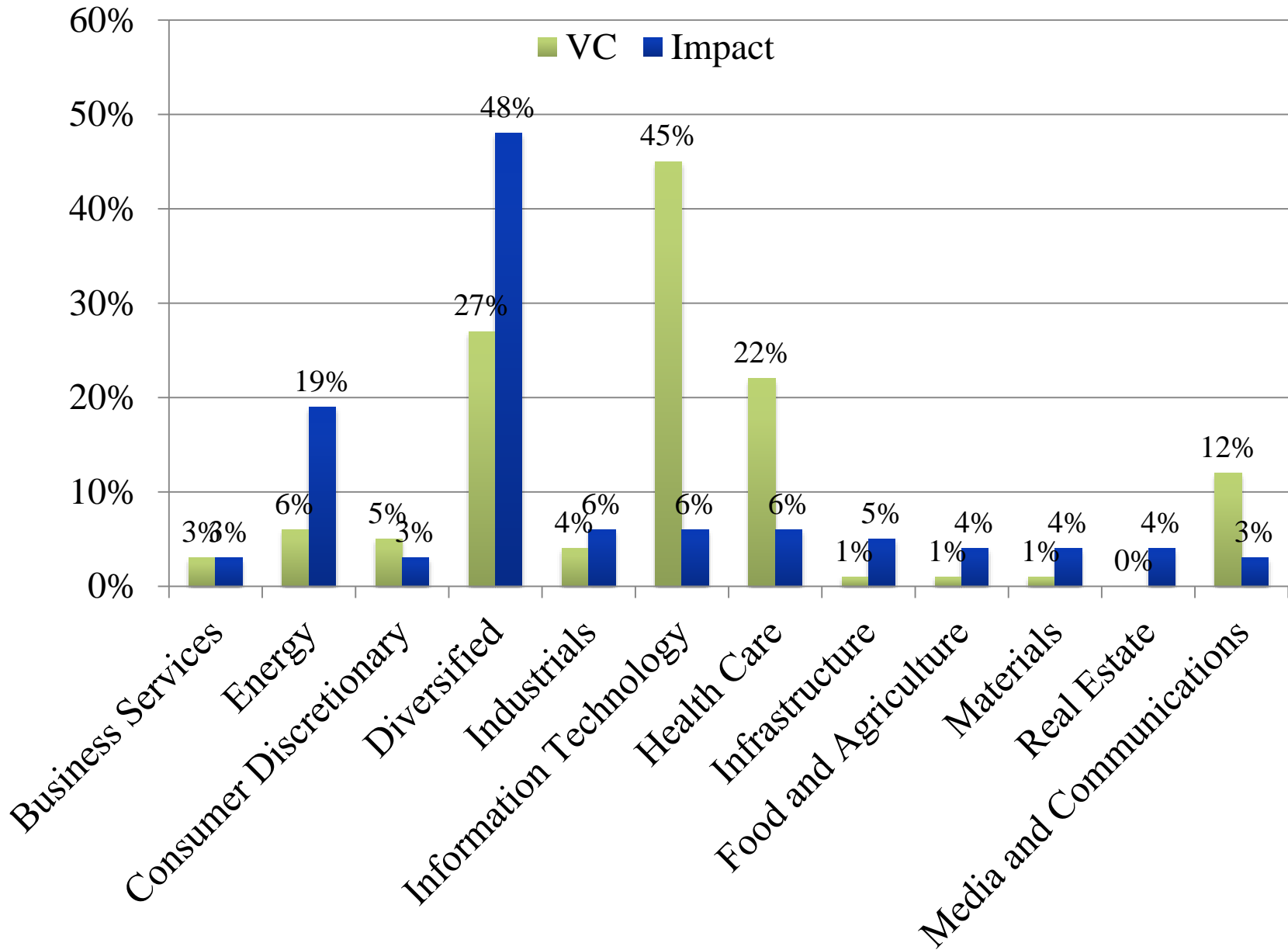
	Traditional VC Funds				Impact Funds			
	N	Mean	Median	Std. Dev.	N	Mean	Median	Std. Dev.
Vintage Year	4500	2005.4	2006.0	5.26	159	2006.7	2008.0	4.44
Fund Size (\$mil)	4000	204.6	102.0	300.2	147	129.6	83.0	147.3
Capital Commit (\$mil)	2717	22.2	14.6	33.8	125	27.1	15.0	32.9
IRR (%)	1207	11.6	7.4	32.1	76	3.7	6.35	15.2
VM - Value Multiple	1484	1.51	1.22	1.94	91	1.17	1.10	0.56
Percentile Rank	1528	0.49	0.50	0.30	93	0.34	0.28	0.30
Fund Sequence Number	4500	3.95	2.00	5.63	159	3.88	2.00	5.91

Characterizing Impact Funds & Investors

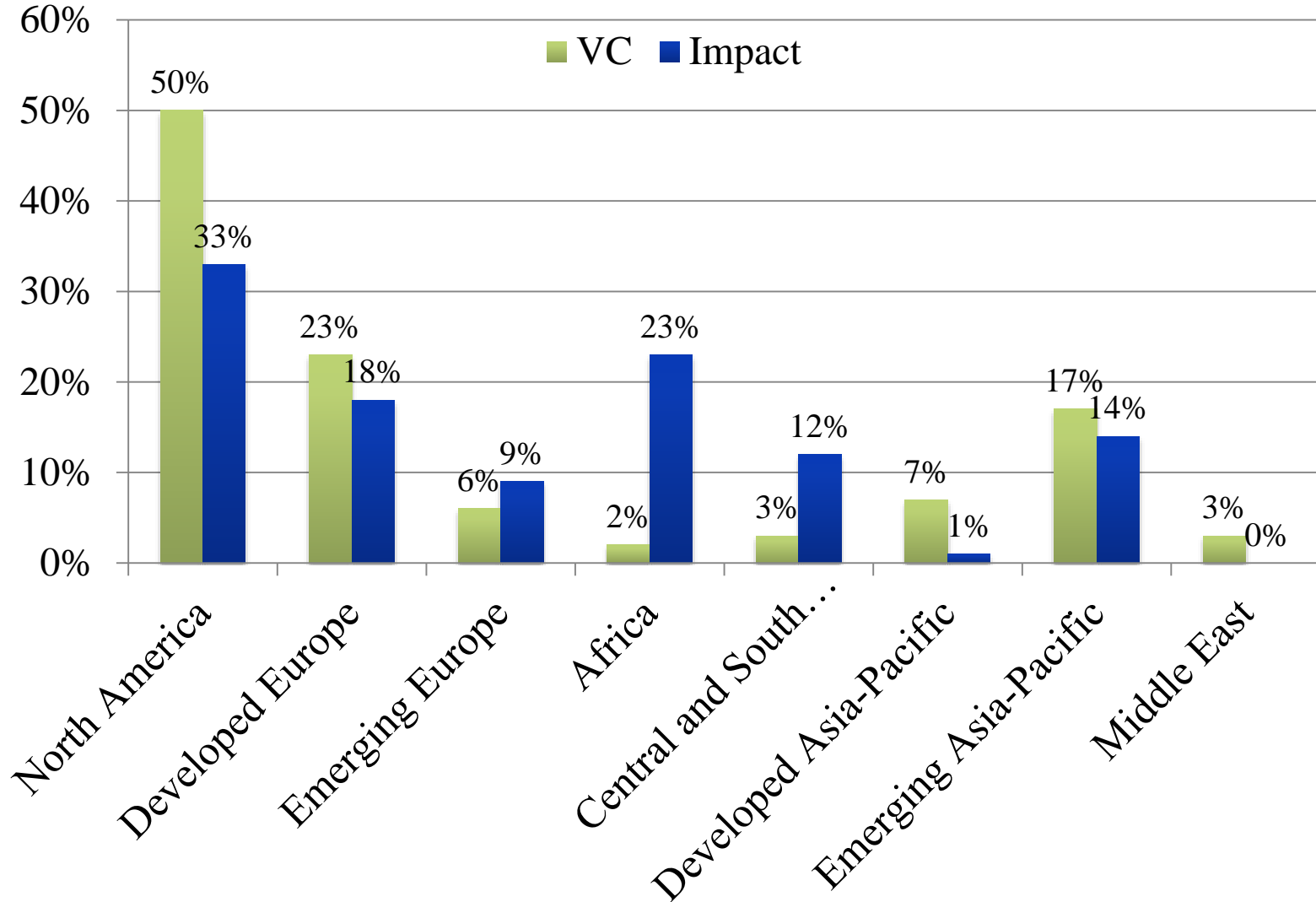
Next few slides:

- Impact Funds are about as likely to be **Local Community Development** as they are **Poverty** or **Green Energy**
- This matters because some types of LPs you would not expect (**banks** and **public pensions**) invest quite a bit in **home-biased local development**

Impact vs. Traditional VC by Industry

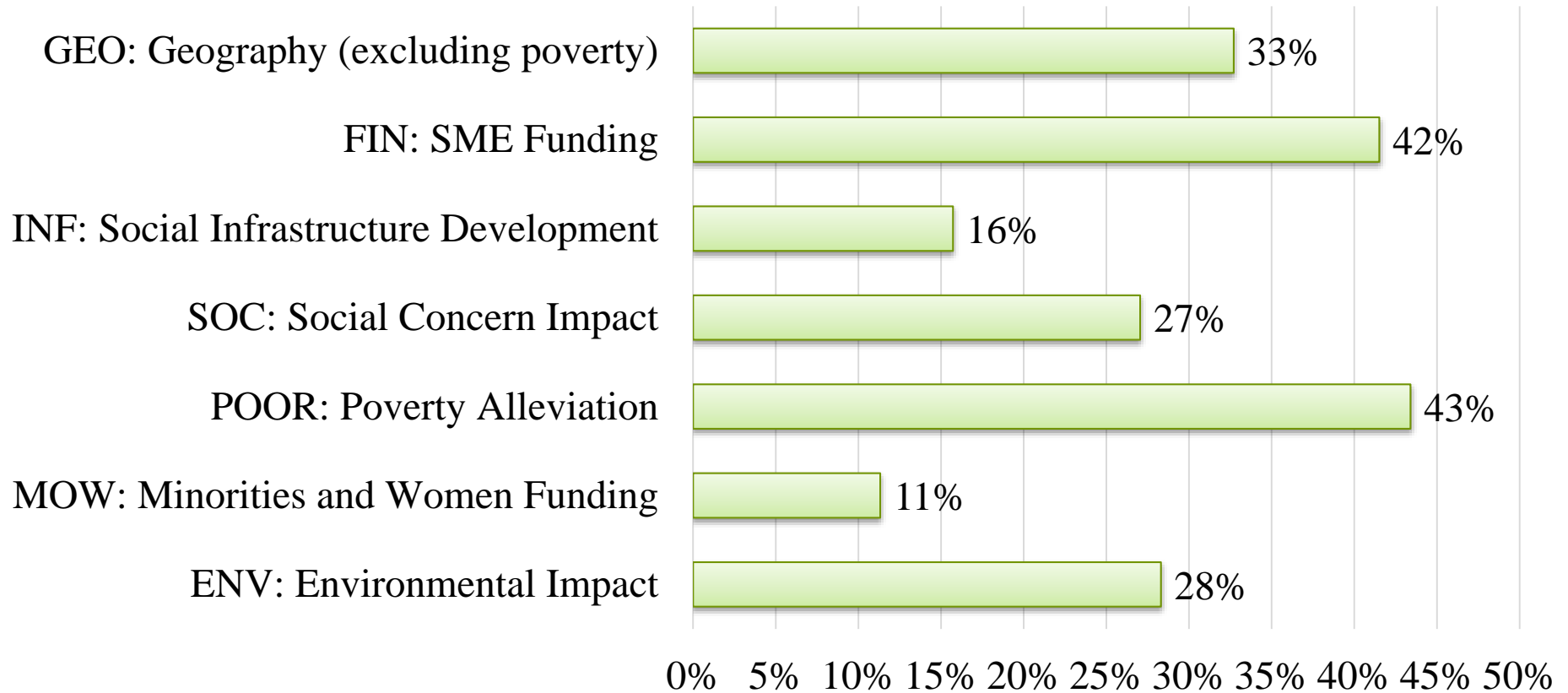


Impact vs. Traditional VC by Region

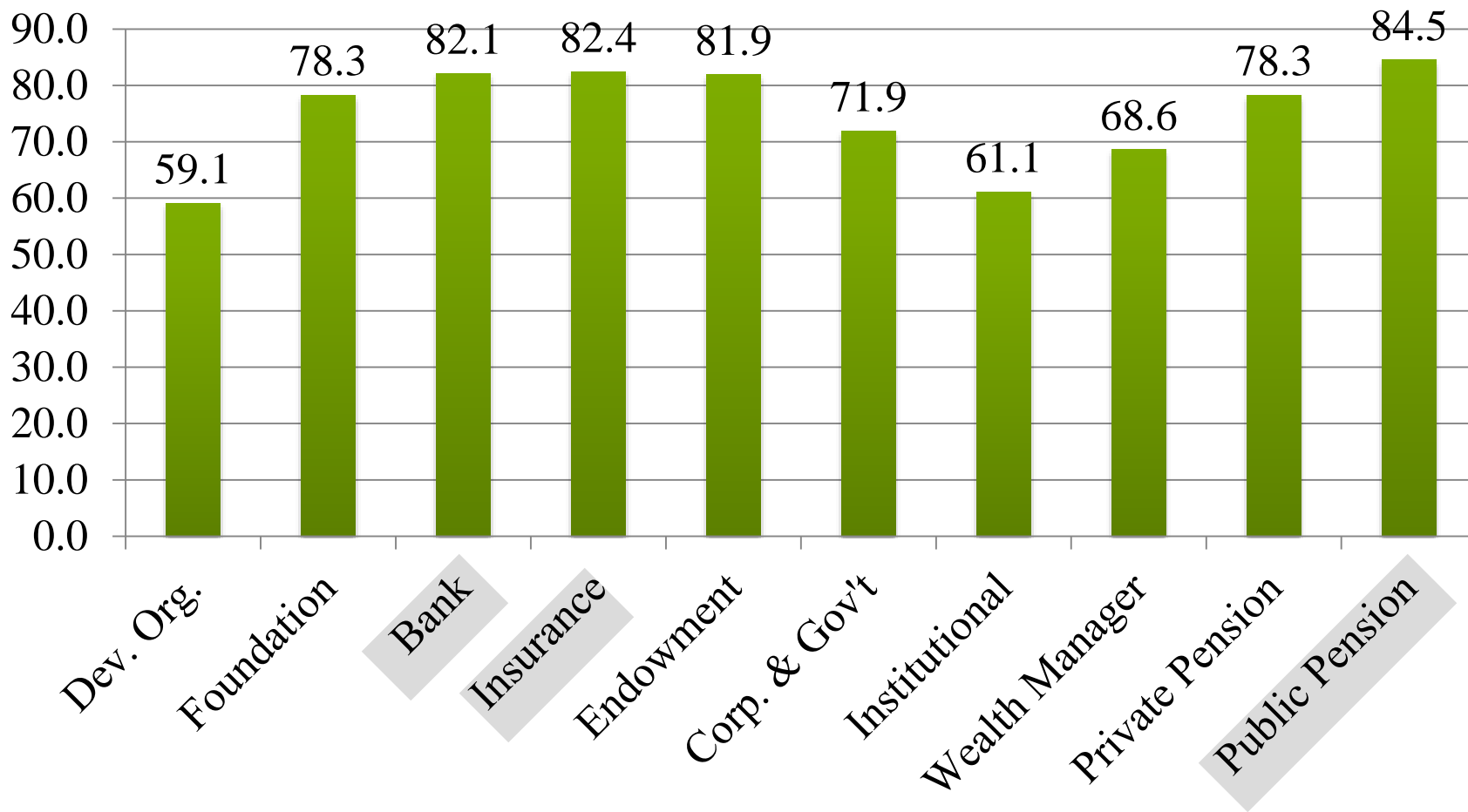


Impact Categories:

% of Funds with Attribute (multiple entries allowed)



% of Investments with Home Bias by Investor (LP) Type



Contribution 1: **Realized Performance**

$$IRR_j = a + bIMP_j + XG + e_j$$

Three regression specifications:

1. Univariate with Impact Dummy
2. (1) + Vintage year fixed effects + fund covariates
3. (2) + Industry and Geography fixed effects

Robust standard errors, clustered by vintage year

Realized Performance

	(1)	(2)	(3)	(6)	(9)
	IRR	IRR	IRR	VM	Rank
Impact	-7.89** [3.705]	-9.94*** [2.638]	-4.73* [2.616]	-0.36** [0.164]	-0.08** [0.036]
N - Impact Funds	76	76	76	91	93
Observations	1,283	1,252	1,252	1,518	1,563
R-squared	0.004	0.146	0.166	0.131	0.068
Controls:					
Vintage Year FE	NO	YES	YES	YES	YES
Log(Fund Size)	NO	YES	YES	YES	YES
Log(Sequence)	NO	YES	YES	YES	YES
Fund Geo. FE	NO	NO	YES	YES	YES
Fund IndustryFE	NO	NO	YES	YES	YES

Methodology: Who has a Willingness-to-pay?

Idea: Investors have utility over impact and financial returns

- Hedonic pricing = methods to price attributes providing utility
 - Court (1939), Griliches (1961), Rosen (1974), McFadden (1986)
 - Cameron/James (1987): Willingness to pay from discrete choice.

$$U^*_{ij} = \mu_i + \beta \mathbb{E}[r_j] + \delta_i \text{IMP}_j + \Gamma' X_{ij} + \varepsilon_{ij}$$

- U^*_{ij} : random utility of investor i from investing in fund j
- $\mathbb{E}[r_j]$: expected return for fund j
- IMP_j : dummy = 1 if fund j is impact fund
- X_{ij} : other factors (prior relationship, size, geo, industry, home bias)

$$U_{ij}=1 \text{ iff } U^*_{ij}>0$$

$$\text{Logit}(U_{ij}) = \mu_i + \beta \mathbb{E}[r_j] + \delta_i \text{IMP}_j + \Gamma' X_{ij} + \varepsilon_{ij}$$

$$wtp_imp_i = \frac{\left(\frac{\partial u}{\partial \text{IMP}_j}\right)_i}{\frac{\partial u}{\partial \mathbb{E}[r_j]}} = \frac{\partial \mathbb{E}[r_j]}{\partial \text{IMP}_j} = \frac{\delta_i}{\beta}$$

**Logit and
Linear
Probability
Model of WTP**

*Dependent
Variable:*

Investment 0/1
Decision

Sample:

All Active LP
Investors
Looking at All
VC Funds of
that Vintage

	Logit	Linear Prob
Expected Returns	3.521*** [0.290]	0.0343*** [0.00342]
Impact	0.593*** [0.0600]	0.00458*** [0.000462]
Observations	3,047,430	3,047,430
Investment Rate Heterogeneity:	Dynamic LP Group Fixed Effects	LP Fixed Effects
Standard Errors:	Clustered at LP	Clustered at LP
Controls:	Prior Relationship, Geography, Industry, Home Bias, Size	

$$wtp_imp = \frac{\left(\frac{\partial u}{\partial IMP_j}\right)_i}{\frac{\partial u}{\partial E[r_j]}} = \frac{\delta}{\beta}$$

WTP

0.17

0.13

*These WTP calculations are in percentile rank performance. Moving 17 percentile rank performance centered around mean (from rank 42%ile to rank 59%ile) implies **WTP in IRR of 2.9% – 4.2%***

Next Steps

Our agenda is very much about understanding [WHO has a WTP.](#)

- **WTP by Region**
 - Prior Literature evidence suggests Europeans have higher WTP
- **WTP by LP Types**
 - Ie: Banks vs pensions vs development organizations
- **WTP by Attributes of these LP Types**

WTP by Source of Capital (LP Home) Region

Logit and Linear Probability Model of WTP

*Dependent
Variable:*

Investment 0/1
Decision

	Logit	Linear Prob
Observations	3,047,430	3,047,430
Investment Rate Heterogeneity:	Dynamic LP Group F.E.	LP Fixed Effects
WTP_North America	0.11	0.11
WTP_Developed Europe	0.26	0.22
WTP_Developed Asia-Pacific	--	0.07
WTP Emerging Asia-Pacific	--	0.04
WTP_Africa, Lat.Amer, E. Eur	0.34	0.28

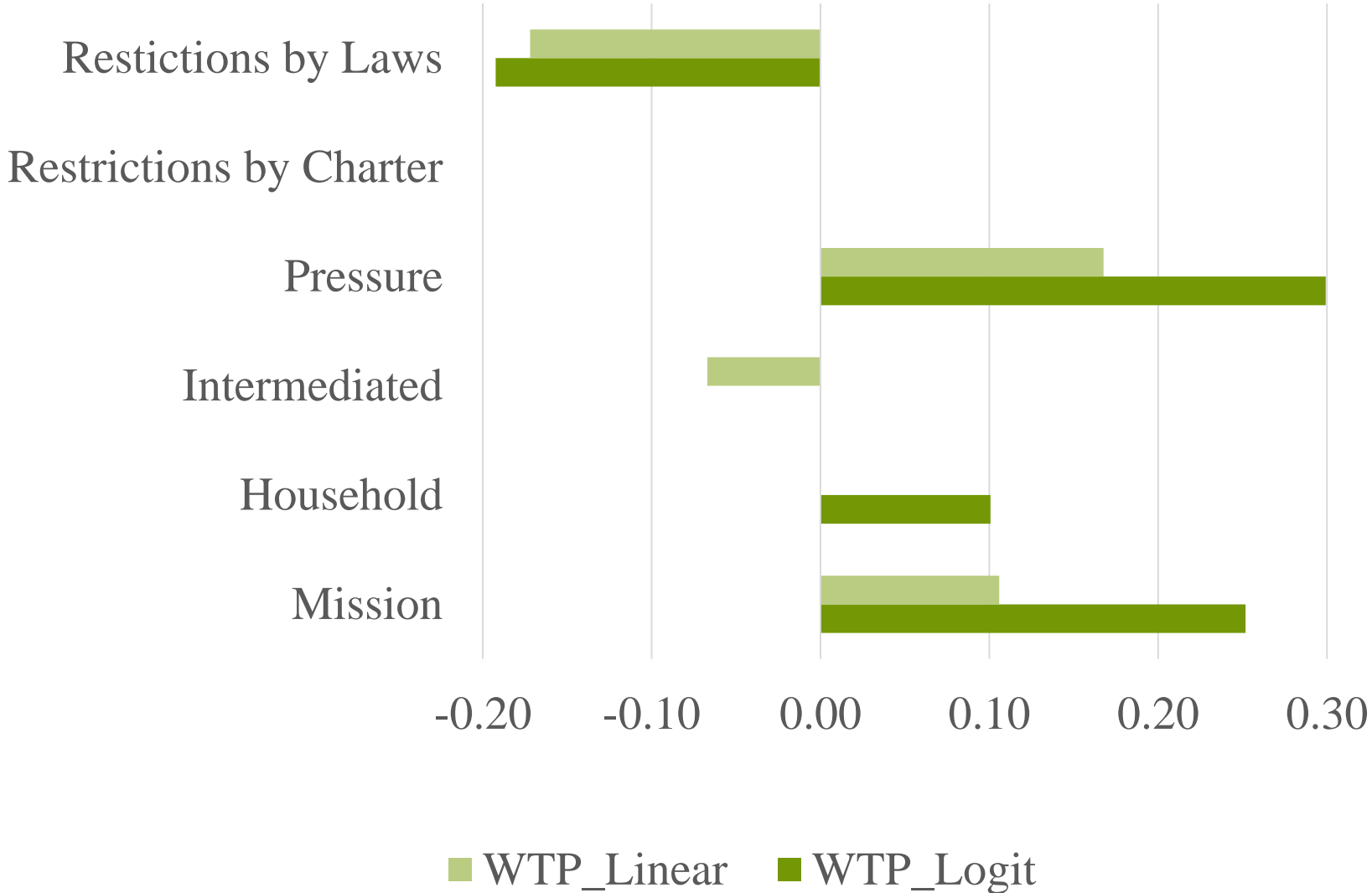
WTP by Source of Capital (LP) Type

WTP by LP Type	Logit		Linear Probability Model	
	(2)	(3)	(2)	(3)
Dev. Org	0.32	0.26	0.36	0.34
Foundation	0.10	--	0.09	0.08
Bank	0.29	0.26	0.20	0.19
Insurance	0.22	0.19	0.16	0.14
Endowment	--	--	0.04	--
Corporation	--	--	0.06	0.07
Institutional	--	--	0.07	--
Wealth Manager	--	--	0.08	0.07
Private Pension	--	--	0.05	0.04
Public Pension	0.24	0.21	0.20	0.18
<u>WTP by LP Geo</u>				
North America				
Developed Europe		0.12		0.09
Developed Asia-Pacific		--		-0.06
Emerging Asia-Pacific		-0.25		-0.10
Africa, Lat.Amer., E. Euro.		0.15		--

What attributes explain the WTP for impact?

Limited Partner	Constituent	Intermediated	Mission	Pressures for Impact	Laws Restricting	Charter Restricting
Development Organizations	Org	--	yes	--	--	--
Foundations	Org	--	yes	--	UPMIFA and tax/PRI (U.S.)	--
Banks	Org	--	--	Community Reinvestment Act (U.S.)	--	yes
Insurance	Org	--	--	State regulation modeled after CRA (U.S.)	--	yes
Endowments	Org	--	--	--	UPMIFA (U.S.)	--
Corporate & Government Portfolios	Org	--	--	--	--	yes
Institutional Asset Managers	Org	yes	--	--	--	yes
Wealth Managers	Household	yes	--	--	--	--
Private Pensions	Household	--	--	--	ERISA (U.S.)	yes (non-US)
Public Pensions	Household	--	--	yes Political pressure	State & National Laws	--

WTP by Attribute, Controlling for Regional Differences



WRAP-UP & NEXT STEPS

Tradeoff willingness-to-pay is 3%

- Sometimes because of mission
 - Sometimes because of need for goodwill or regulatory credits
-

But impact fund universe is small vis-à-vis public markets.

- Punchlines do not necessarily scale. We have no idea of how much WTP is in aggregate.
 - And we do not know what is being achieved
-

Steps forward:

- What has most impact: Doing **Financial Packaging** of investors with different WTPs or (and/or) **blended tradeoff investments**?
- Is sustainable finance movement making companies better? Very overlooked in literature
 - It's not just about investors: Real effects from firm changes
- Financial innovation & research needs more Millennial thinking:
"It's obvious we internalize responsibility. Financial sector needs to do their job to optimize"

APPENDIX

An example of financial structuring

Blue Forest Conservation Notes

