



THE CASE FOR PE INVESTMENT FOR A LARGE INSTITUTIONAL INVESTOR

PER STRÖMBERG

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SSE AND SHOF*

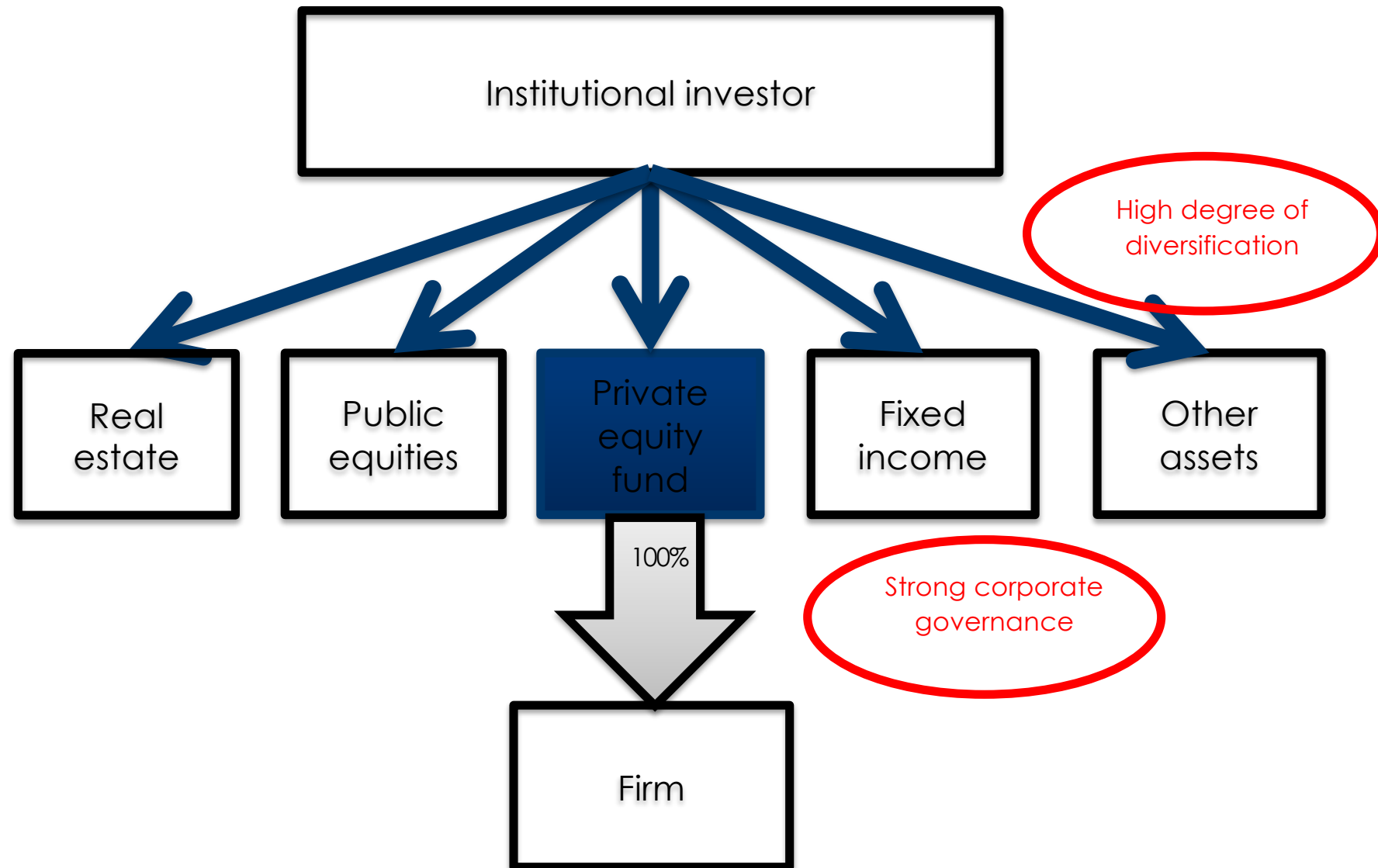
**EHL 2ND ANNUAL PRIVATE MARKETS RESEARCH CONFERENCE
JULY 5, 2018**



QUESTIONS ADDRESSED IN REPORT

1. The PE governance model
 2. Market size
 3. PE risk and return
 4. Beating the average
 - Access to top funds
 - Direct and Co-investments
 - Managed accounts and strategic partnerships
 - New fund models
 5. Implementation issues
- } Fee-reducing strategies

PRIVATE EQUITY AS DELEGATED GOVERNANCE





THE PE OWNERSHIP MODEL

- Difference with other asset management: not a zero-sum game!
- Why hard to achieve in a public setting?
 - Passive, uninformed shareholders in public companies
 - Trade-off: diversification and liquidity vs. active ownership and informed governance
- Top PE investors develop unique skills that are hard to replicate
- Financial, Governance, and Operational engineering (Kaplan and Strömberg, 2009)
- Plenty of evidence on growth, productivity, and efficiency gains in companies.



ESTIMATE OF THE INVESTABLE MARKET (USD BN)

	PE worldwide assets under management (June 2017)						GPFM Investable market	
	Funds	Co-investments	Direct investments	Total				
Venture Capital	387	35	30	451	19%		107	7%
Growth Equity	305	27	34	367	15%		180	12%
Buyout	1 241	112	104	1 457	61%		1 113	76%
Distress and other	102	9	14	125	5%		67	5%
All Private Equity	2 035	183	182	2 400	100%		1 467	100%
	85%	8%	8%	100%				
"Dry powder"				1 165			687	
% of total				49%			47%	

Excludes (a) infrastructure, real estate, private debt (except distress), and natural resources funds; (b) direct investments in utilities, real estate and energy → ~35% of private capital mkt. GPFM investable market excludes funds < USD 1Bn and direct investments < USD 100 M.



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- Market size is endogenous: More committed → larger market
 - In U.S., private firms account for 50% of profits and investment; 86% of firms > 500 employees.
- Recent game changer in VC not reflected in data
 - Excludes \$100Bn Vision Fund, and large Chinese funds raised H2 -17.



PE NET RETURNS HAVE EXCEEDED THE PUBLIC INDEX

	Buyout PME (701 funds)			VC PMEs (1085 funds)		
	Average (S&P 500)	Median (S&P 500)	Weighted average (S&P 500)	Average (S&P 500)	Median (S&P 500)	Weighted average (S&P 500)
Whole pd	1.20	1.14	1.25	1.35	0.97	1.46
<i>Direct alpha</i>	<i>3.07%</i>	<i>2.40%</i>	<i>3.16%</i>	<i>2.07%</i>	<i>-2.93%</i>	<i>0.47%</i>
2000s	1.23	1.19	1.28	0.96	0.81	0.99
1990s	1.23	1.16	1.25	2.05	1.26	2.26
1980s	1.16	1.09	1.25	0.89	0.76	0.98

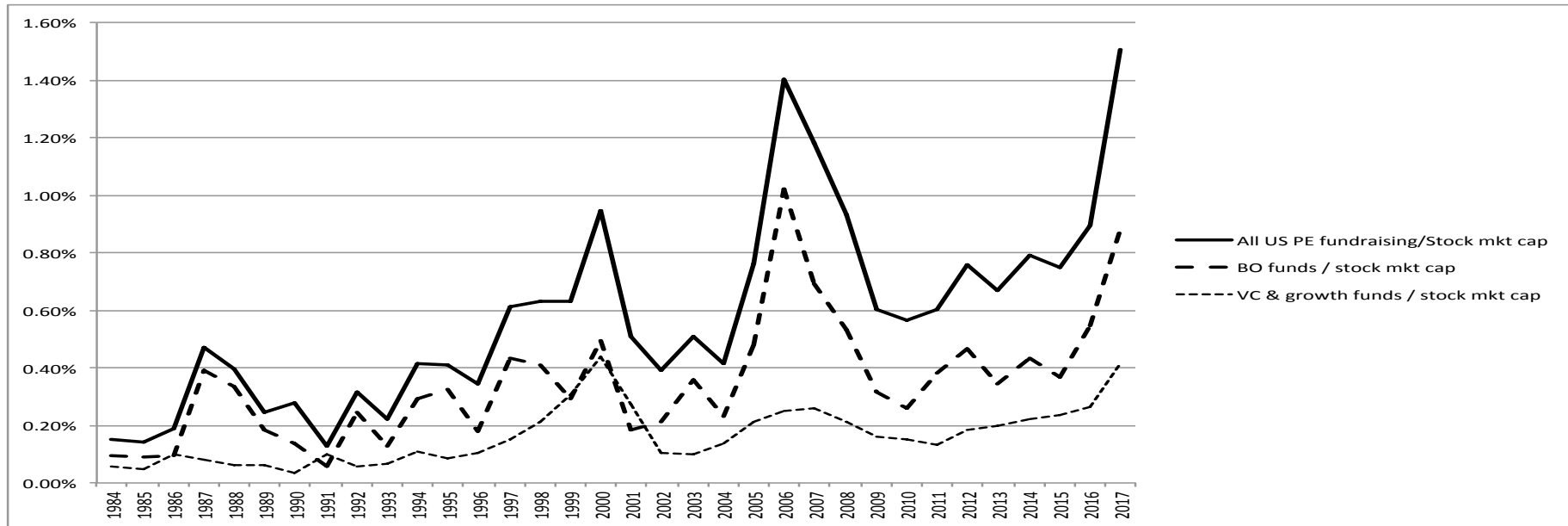


WHY ARE PE RETURNS HIGHER THAN PUBLIC?

- Compensation for risk
 - A market cannot have an “alpha”...
1. Compensation for illiquidity risk
 2. Different loadings on public equity risk factors
 3. PE-specific exposures

(1) TIME-VARYING ILLIQUIDITY PREMIUM

U.S. PE fundraising relative to public stock market capitalization



VARIABLES	(1) Capital- Weighted PME Buyouts	(2) Avg Net Multiple Buyouts	(3) Capital- Weighted PME Venture	(4) Avg Net Multiple Venture
Commitments to US BO funds / stock mkt cap	-33.702** -2.185	-162.306*** -3.187		
Commitments to VC and growth funds / stock mkt cap			-240.386 -1.316	-646.655** -2.527
Constant	1.369*** 23.642	2.563*** 13.408	1.782*** 5.663	3.300*** 7.486
Observations	28	28	28	28
R-squared	0.155	0.281	0.062	0.197

(2) DIFFERENT LOADINGS ON (PUBLIC) FACTORS

<i>Individual PE deals / before fee and carry</i>							
Paper	Cochrane (2005)	Korteweg and Sorensen (2010)	Jegadeesh et al (2015)		Axelson et al (2014)	Nowak et al (2012)	Jegadeesh et al (2015)
VC or BO	VC	VC	VC		BO	BO	BO
Market beta	1.7	2.3	1.1-1.2		2.2-2.4	1.0-1.3	0.9-1.1
HML		-1.6	0		-	0.7-1.0	0.8
SMB		1.0	0.4		-	insig (neg)	0.6
Liquidity (PS)		-	-		-	0.6	-
Momentum		-	-		-	-	insig (neg)
PE-specific facto	no	yes	no		no	no	no
"Alpha"	32%	-5%	0		8.5%	0.4%	0
Method	ML	Bayesian	OLS		ML	GLS	OLS
Data	16600 deals for 7800 companies	61000 deals for 18000 companies	129 publicly traded PE firms		2075 BO deals from large LP	CEPRES data on 4400 deals	129 publicly traded PE firms
<i>Net cash flows to PE funds / after fee and carry</i>							
Paper	Jegadeesh et al (2015)	Driessen et al (2013)	Korteweg and Nagel (2016)	Ang et al (2017)	Jegadeesh et al (2015)	Driessen et al (2013)	Ang et al (2017)
VC or BO	VC	VC	VC	VC	BO	BO	BO
Market beta	0.9-1.0	2.4-2.7	2.7	1.5-2	0.7	1.3-1.7	1.2-1.8
HML	insig (pos)	insig (neg)	-	-0.6	insig (pos)	1.4 (insig)	0.5-0.7
SMB	0.5	insig (pos)	3.7	0.8-0.9	0.5	insig (neg)	insig (pos)
Liquidity (PS)	-	-	-	insig (pos)	-	-	0.6
Momentum	-0.1	-	-	-	0	-	-
PE-specific facto	no	no	no	yes	no	no	yes
"Alpha"	0	-1%	-10%	-5%-0%	0	insig (neg)	-4%-4%
Method	OLS	GMM	GMM	Bayesian	OLS	GMM	Bayesian
Data	24 publicly traded PE Fund-of-funds	686 VC funds from TVE	545 VC funds (#) (Preqin)	453 VC funds (Preqin)	24 publicly traded PE Fund-of-funds	272 BO funds, from TVE	423 BO funds from Preqin



(2) DIFFERENT LOADINGS ON (PUBLIC) FACTORS

	Buyout PMEs			Small growth	Venture PMEs		
	Average across vintages	Average across sample	Median across sample		Average across vintages	Average across sample	Median across sample
S&P 500	1.20	1.18	1.09		1.35	1.23	0.87
Small stocks (Russell 2000)	1.23	1.16	1.03		1.48	1.26	0.84
Small value (Russell 2K value)	1.17	1.08	1.01		1.52	1.30	0.87
Beta 1.5	1.20	1.20	1.07		1.29	1.21	0.85
Beta 2.0	1.27	1.30	1.12		1.30	1.27	0.89

Source: Harris, Jenkinson, and Kaplan (2016)

Public-Index Replication seems premature:

- Factor estimates unstable across methodologies, samples.
- Proposed mimicking portfolios involve investment in relatively illiquid / small stocks with limited investment capacity



(3) PE-SPECIFIC EXPOSURES

- Results in Ang, Chen, Goetzmann, & Phalippou (2017) suggests PE risks not spanned by public market
- I consider three mechanisms
 1. Access to different industries
 2. Access to different geographies
 3. Increasing divergence between private and public markets



INDUSTRIES AND GEOGRAPHIES

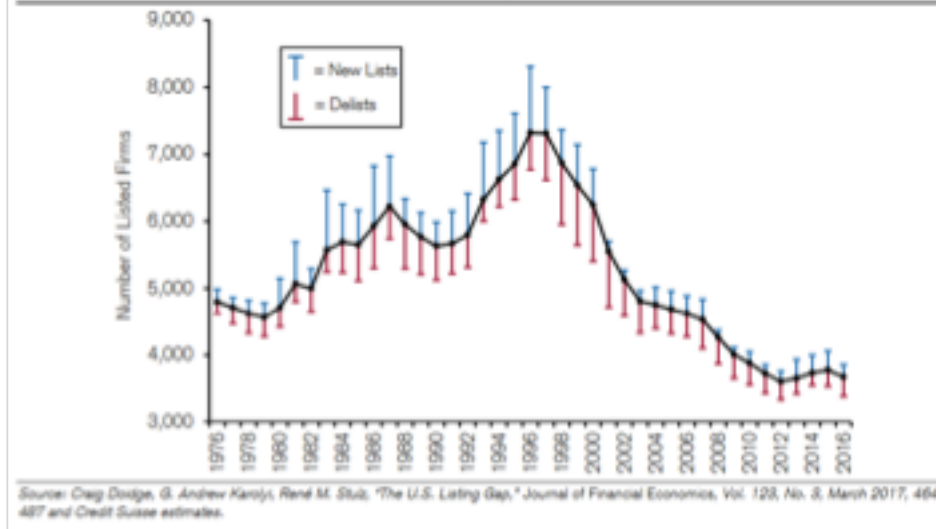
Sector	Public market weights	CIQ PE deals (equity)						
	Dec-16	All 2011-16	>100MUSD	>500MUSD	>1000MUSD	Buyouts	Growth	VC
Consumer Discretionary	12%	18%	18%	13%	12%	19%	13%	11%
Consumer Staples	10%	5%	6%	5%	7%	6%	3%	4%
Energy	7%	8%	11%	15%	16%	7%	8%	16%
Financials	23%	8%	9%	10%	9%	8%	11%	7%
Healthcare	11%	10%	8%	7%	5%	9%	13%	11%
Industrials	14%	15%	15%	12%	9%	14%	8%	6%
Information Technology	12%	21%	17%	22%	24%	17%	35%	38%
Materials	5%	5%	5%	3%	3%	6%	3%	1%
Real Estate	0%	5%	5%	6%	7%	10%	3%	3%
Telecommunication Services	3%	1%	2%	2%	1%	2%	1%	1%
Utilities	3%	4%	5%	5%	6%	4%	2%	2%

	1996-2000			2001-2005			Dec-10 2006-2010			2011-2016		
	Public market weights	CIQ PE deals (equity)	PE-Public diff	Public market weights	CIQ PE deals (equity)	PE-Public diff	Public market weights	CIQ PE deals (equity)	PE-Public diff	Public market weights	CIQ PE deals (equity)	PE-Public diff
	Dec-00	1996-2000		Dec-05	2001-2005		Dec-10	2006-2010		Dec-16	2011-2016	
Americas Developed	57%	66%	9%	56%	52%	-5%	47%	47%	0%	58%	46%	-12%
Americas Emerging	0%	2%	2%	1%	2%	1%	3%	2%	-1%	1%	3%	2%
Asia-Pacific Developed	14%	4%	-9%	11%	5%	-6%	16%	5%	-11%	14%	5%	-9%
Asia-Pacific Emerging	0%	1%	1%	2%	3%	1%	7%	7%	1%	6%	16%	10%
Europe Developed	29%	23%	-6%	28%	35%	7%	24%	35%	11%	19%	26%	7%
Europe Emerging	0%	2%	2%	0%	1%	1%	1%	2%	0%	1%	2%	1%
Middle East and Africa, Developed	0%	1%	1%	0%	1%	1%	0%	0%	0%	0%	1%	0%
Middle East and Africa, Emerging	0%	1%	1%	1%	1%	0%	1%	2%	1%	1%	2%	1%
Total	100%	100%	0%	100%	100%	0%	100%	100%	0%	100%	100%	0%

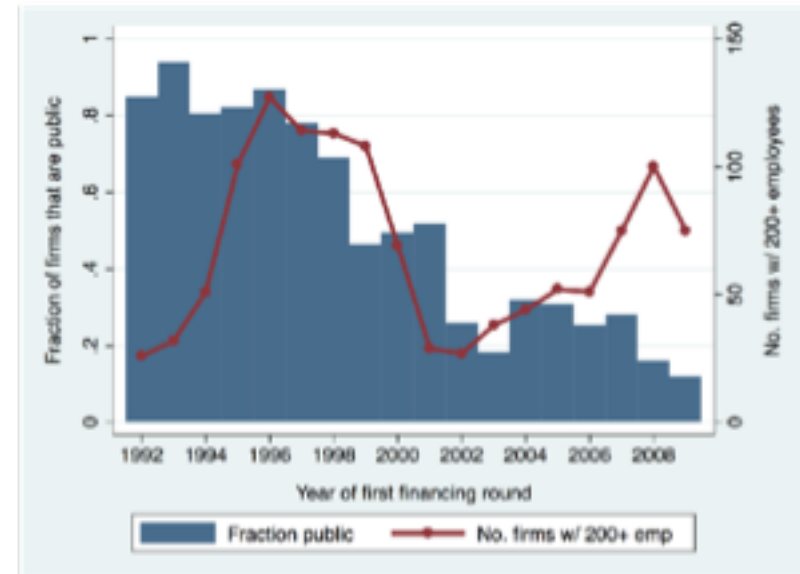
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INCREASING DIVERGENCE PUBLIC VS PRIVATE EQUITY

Exhibit 2: Additions and Subtractions to Listed Companies, 1976-2016



The figure reports the number of startups that had at least 200 employees seven years after their first round of financing (measured using VentureSource, NETS and Compustat), split into two groups. "Private" is the count of firms that satisfy this criteria that were still private (i.e. no IPO, sale or acquisition) seven years after their first financing. "Public" are the set of firms that went public within seven years of their first financing event. The employee count is measured either as a private firm or public firm, seven years after first financing.



- Fewer, larger public companies
- Firms stay private longer, unicorn phenomenon
- Trend since post -1990s tech boom
 - Temporary or permanent phenomenon?



HOW CAN INVESTOR DO BETTER THAN AVERAGE?

TWO “BEST PRACTICE” MODELS

1. “Endowment model” (e.g. Yale)
 - Access to oversubscribed funds by top-performing GPs
 - Almost exclusively *external* fund managers
 - *Small* staff
 - Capture illiquidity premium through *liquidity risk management, flexible governance*
 2. “Canadian model” (e.g. CPPIB)
 - Focus on *fee-reduction* strategies, economies of scale
 - More reliance on *internal* investment teams
 - *Large* staff
 - Capture illiquidity premium through *long-term liabilities, liquid asset portfolio, flexible governance*
- EM has longer track record, CM somewhat unproven
 - CM more scalable, EM harder to implement for large institutional investor



METHOD (1): CAPTURING ILLIQUIDITY PREMIUM

- Avoid pro-cyclical PE allocations
 - Hard to be countercyclical due to pro-cyclicality in fund raising and investment
 - Can at least avoid return-chasing, aim for stable allocations
- Ways to increase allocation when illiquidity premium high:
 - Direct investments
 - E.g. CPPIB investments in Skype, Tomkins plc in 2009-2010
 - Opportunistic co-investments
 - E.g. acquiring buyout debt portfolios in 2009
 - Secondary transactions at large discounts
 - Value transfer from less liquid to more liquid investors
 - Increasing competition? Worked in 2002 as well as 2009...
- Importance of LP governance
 - Flexible asset allocation mandates (e.g. avoid denominator effect)
 - Board willing “double down” when past returns look poor?

METHOD (2): ACCESS TO TOP FUNDS

Panel A : Buyout Funds

A.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	100.0%
	1	2	3	4		
1	34.0%	26.0%	25.0%	15.0%	100.0%	
	34	26	25	15	100	
2	24.4%	23.3%	31.1%	21.1%	100.0%	
	22	21	28	19	90	
3	23.7%	27.6%	34.2%	14.5%	100.0%	
	18	21	26	11	76	
4	12.1%	24.1%	29.3%	34.5%	100.0%	
	7	14	17	20	58	

Panel B : Venture Capital Funds

B.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	100.0%
	1	2	3	4		
1	48.6%	20.5%	19.9%	11.0%	100.0%	
	71	30	29	16	146	
2	27.3%	32.4%	23.0%	17.3%	100.0%	
	38	45	32	24	139	
3	20.2%	29.8%	28.2%	21.8%	100.0%	
	25	37	35	27	124	
4	12.9%	19.4%	30.1%	37.6%	100.0%	
	12	18	28	35	93	

Source: Harris, Jenkinson, Kaplan, and Stucke (2014)

- Overstated? Previous fund performance not known at time of fundraising (Phalippou, 2010; Korteweg & Sorensen, 2017)
- Understated? LPs have access to more info than just past performance (Hüther, Robinson, Sievers, 2015)

METHOD (2): ACCESS TO TOP FUNDS

Panel A : Buyout Funds

A.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	Total
	1	2	3	4		
1	34.0%	26.0%	25.0%	15.0%	100.0%	100
	34	26	25	15		100
2	24.4%	23.3%	31.1%	21.1%	100.0%	90
	22	21	28	19		90
3	23.7%	27.6%	34.2%	14.5%	100.0%	76
	18	21	26	11		76
4	12.1%	24.1%	29.3%	34.5%	100.0%	58
	7	14	17	20		58

A.3 Post-2000 Funds

Previous Fund Quartile PME	1	2	3	4	Total
1	28.3%	26.7%	26.7%	18.3%	100.0%
	17	16	16	11	60
2	23.0%	19.7%	32.8%	24.6%	100.0%
	14	12	20	15	61
3	25.6%	27.9%	34.9%	11.6%	100.0%
	11	12	15	5	43
4	11.4%	22.9%	31.4%	34.3%	100.0%
	4	8	11	12	35

Panel B : Venture Capital Funds

B.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	Total
	1	2	3	4		
1	48.6%	20.5%	19.9%	11.0%	100.0%	146
	71	30	29	16		146
2	27.3%	32.4%	23.0%	17.3%	100.0%	139
	38	45	32	24		139
3	20.2%	29.8%	28.2%	21.8%	100.0%	124
	25	37	35	27		124
4	12.9%	19.4%	30.1%	37.6%	100.0%	93
	12	18	28	35		93

B.3 Post-2000 Funds

Previous Fund Quartile PME	1	2	3	4	Total
1	47.6%	20.6%	23.8%	7.9%	100.0%
	30	13	15	5	63
2	26.6%	32.8%	18.8%	21.9%	100.0%
	17	21	12	14	64
3	13.1%	29.5%	34.4%	23.0%	100.0%
	8	18	21	14	61
4	23.8%	14.3%	33.3%	28.6%	100.0%
	10	6	14	12	42

Persistence going down in buyout, not VC.

METHOD (2): ACCESS TO TOP FUNDS

Panel A: Buyout Funds

A.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	100.0%
	1	2	3	4		
1	35.0%	25.0%	25.0%	15.0%	100	100.0%
2	24.0%	23.3%	31.1%	21.1%	90	100.0%
3	23.7%	27.0%	34.2%	14.5%	76	100.0%
4	12.1%	24.1%	29.3%	34.5%	58	100.0%

A.3 Post-2000 Funds

Previous Fund Quartile PME	1	2	3	4	Total	100.0%
1	25.7%	26.7%	26.7%	18.3%	60	100.0%
2	23.0%	19.7%	32.8%	24.6%	61	100.0%
3	25.6%	27.9%	34.9%	11.6%	43	100.0%
4	11.4%	22.9%	31.4%	34.3%	35	100.0%

Panel B: Venture Capital Funds

B.1 Total Sample

Previous Fund Quartile PME	Current Fund Quartile PME				4 Total	100.0%
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B.3 Post-2000 Funds

Previous Fund Quartile PME	1	2	3	4	Total	100.0%
1	47.6%	20.6%	23.8%	7.9%	63	100.0%
2	26.6%	32.8%	18.8%	21.9%	64	100.0%
3	13.1%	29.5%	34.4%	23.0%	61	100.0%
4	23.8%	14.3%	33.3%	28.6%	42	100.0%

Persistence going down in buyout, not VC. Why?

- BO scalable → larger funds → decreasing marginal returns?
 - Lower returns but higher NPV?
 - Superior access does not scale easily (even for Yale...)
- Teams spinning off
 - Persistence in teams, not PE firms?
- PE skill-set becoming less proprietary?
 - If so, do we need to pay these fees?



METHOD (3): REDUCE FEES THROUGH DIRECT INVESTMENT STRATEGIES

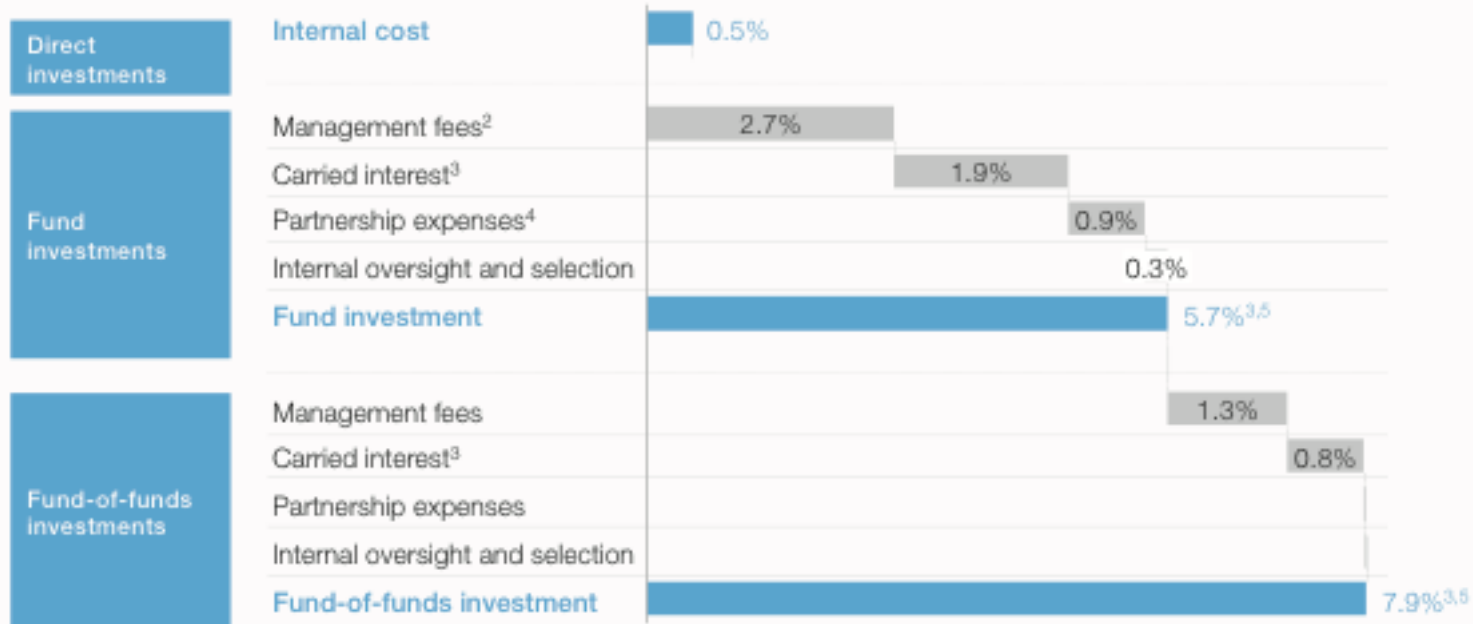
Exhibit 9

Cost comparison of direct investments, fund investments and fund-of-fund investments

Cost comparison¹ direct vs. fund vs. fund-of-funds investment

Average annual cost, % of Net asset value⁵

Small sample size for internal (n=15)



Source: McKinsey (2017) using data from CEM Benchmarking

All-in fee estimates vary between 5-7% of invested assets
→ Scope for higher returns through reducing fees (even at the expense of lower gross alpha)



FORMS OF INVESTING DIRECTLY IN COMPANY

		<i>LP needs to be investor in fund that is leading the investment</i>	<i>Deal is free of fee and carry</i>	<i>LP conducts own analysis and makes decision</i>	<i>Broken deal risk</i>	<i>LP is active in sourcing</i>	<i>LP is active in due diligence</i>	<i>LP is active in the ownership phase</i>	<i>LP is active in the exit phase</i>	<i>LP takes lead role in adding value to portfolio company</i>	<i>Requirements on the LPs internal investment team</i>
Co-investments	<i>Co-investment fund</i>	Sometimes	No	No	No	No	No	No	No	No	None
	<i>Post-signing co-investments</i>	Yes	Yes	Yes	No	No	No	No	No	No	Low
	<i>Co-underwriting</i>	Usually	Yes	Yes	Yes	No	Yes	No	No	No	Moderate
Direct investments	<i>Syndicated / Minority</i>	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	High
	<i>Lead / majority</i>	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Very high

FORMS OF INVESTING DIRECTLY IN COMPANY

		<i>LP needs to be investor in fund that is leading the investment</i>	<i>Deal is free of fee and carry</i>	<i>LP conducts own analysis and makes decision</i>	<i>Broken deal risk</i>	<i>LP is active in sourcing</i>	<i>LP is active in due diligence</i>	<i>LP is active in the ownership phase</i>	<i>LP is active in the exit phase</i>	<i>LP takes lead role in adding value to portfolio company</i>	<i>Requirements on the LPs internal investment team</i>
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	<i>Post-signing co-investments</i>	Yes	Yes	Yes	No	No	No	No	No	No	Low
	<i>Co-underwriting</i>	Usually	Yes	Yes	Yes	No	Yes	No	No	No	Moderate
Direct investments	<i>Syndicated / Minority</i>	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	High
	<i>Lead / majority</i>	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Very high

- No systematic large-sample evidence on returns to direct invest.
- Adverse selection unlikely in deals chosen for co-investment, more likely in which funds offering them
- Some evidence that direct investment strategies in buyout have outperformed fund investments.
- Large public pensions are unlikely to be able to build in-house value-added teams → go for minority investments or “easier” deals (e.g. infrastructure)
- Anecdotal evidence of family offices creating successful in-house teams leading deals in small/mid-cap buyout and growth.



METHOD (4): USING LP BARGAINING POWER TO IMPROVE FUND TERMS

- Better terms in exchange for larger and/or longer-term capital commitments
 - Less likely for most popular, oversubscribed funds
 - More likely for “mega”, multi-product alternative asset managers
- Some scope for “price discrimination” in LPAs
 - Mgmt fee reductions, co-investment opportunities, ...
- Managed accounts, strategic partnerships
 - Scope for reducing fees
 - Possible to get “bespoke” investment mandates
 - ESG, sectors, geographies

CAN WE IMPROVE THE LP-GP CONTRACT?

- Considerable evidence of GP-LP agency costs
 - Excessive leverage and overpaying for deals (Axelson et al, 2013)
 - Overinvestment (Axelson et al, 2009; Degeorge et al 2016; Arcot et al 2015)
 - Raising too much money (Lopez-de-Silanes et al, 2015)
 - Exiting investments too early (Gompers, 1996; Robinson & Sensoy 2013))
 - IRR gaming (Phalippou, 2009)
 - Hidden fees (Phalippou, 2009)
 - Lack of risk- & market benchmarking (Axelson et al, 2013; Strömberg 2015)
- Can we improve fund structures? E.g.:
 - Longer / evergreen funds?
 - Base carry on relative, risk-adjusted performance?
 - Base management fee on actual costs?
- Beware of going from second- to third best. E.g.:
 - Ability to hold on to investments vs. lack of fundraising discipline?
 - Rel. performance pay vs. incentive alignment along LP-GP-PC chain?
 - Adverse selection in GP teams?



OTHER IMPLEMENTATION ISSUES

- Difficulty in performance measurement relative to liquid asset classes
 - Takes time, effort, and patience to evaluate performance
 - E.g. CPPIB quant team
 - Leads to lack of accountability?
- Non-financial risks
 - Political horizon < PE investment horizon
 - Agency issues within LP organization
 - Pay-to-play, risk-taking
 - ESG and headline risk
 - Environment, labor, taxes, governance scandals...
 - Particularly for LPs investing directly
 - Organizational and compensation risk
 - Attracting and retaining talent under acceptable, transparent pay schemes?

- Unique characteristics:
 - Size
 - Long-term focus
 - Transparency and public accountability
- Positives:
 - Economies of scale: bargaining power, internal teams
 - Capacity to carry liquidity risk
 - Reputation for transparency and responsibility
- Negatives/challenges:
 - Diseconomies of scale, e.g. top VC funds
 - Need for transparency and political accountability → governance challenge, e.g. in performance measurement, compensation of team
 - Current timing not ideal, with so much money in the PE market?



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