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Benchmarking 201: Comparative Analysis of Tools and Providers

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Part I

What Do Different Data Sets Tell Us About Private Equity Performance?

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Overview

- Who provides PE/VC data?
- What are different performance measures?
 - Which make sense?
- What is PE/VC performance at the fund level?
 - Talk about some recent papers
 - Data sets with Brown, Harris, Jenkinson and Robinson
 - PE performance with Harris and Jenkinson (Journal of Finance and Journal of Investment Management)
- Do first for Buyout/PE, then repeat for VC

Who measures performance?

- Five commercial databases:
 - Burgiss
 - Cambridge Associates (CA)
 - Pitchbook
 - Preqin
 - State Street
 - State Street chose not to provide data - (hiding something?)

■ Burgiss

- Sourced exclusively from LPs
 - Include all funds and cash flows from the LPs that provide the data
 - LPs comprise wide array of institutions
- LPs use Burgiss products for their internal processes:
 - record keeping and fund investment monitoring
- Data come from “over 300 investment programs and represent almost \$1 trillion in committed capital”
 - 2/3 have PE commitments in over \$100 million:
 - 60% are pension funds (a mix of public and corporate)
 - 20%+ are endowments or foundations
 - Burgiss believes the PE funds in the sample represent >70% of funds ever raised

■ Cambridge Associates (CA).

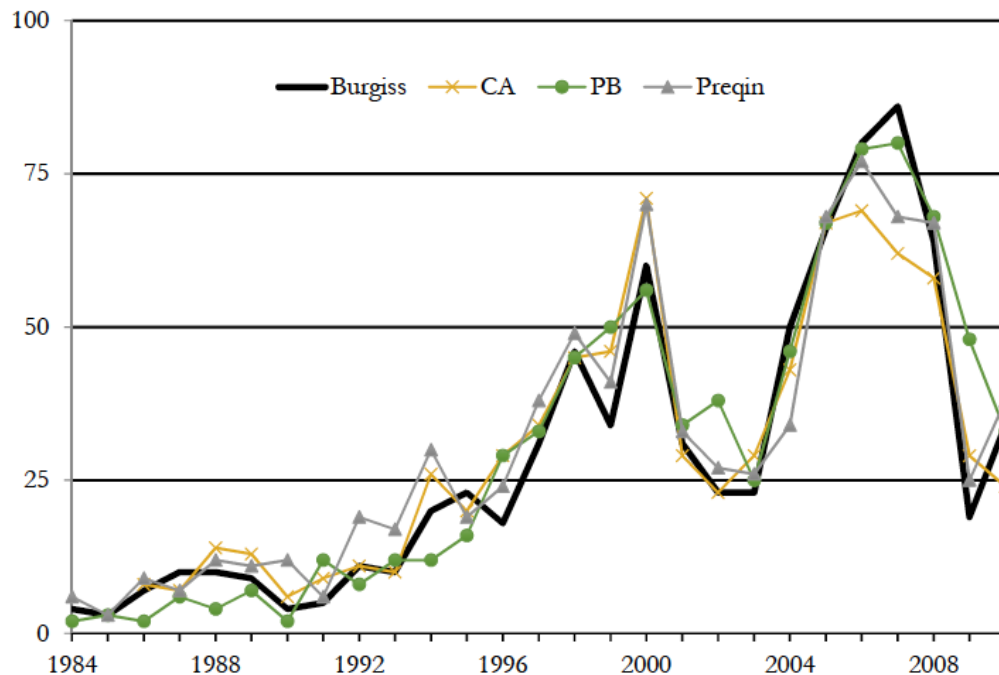
- Provides array of investment management services to clients
- For many LP clients, provide private investment performance reporting, recommend GPs, etc.
 - Receive fund level data directly from GPs
 - Roughly 2/3 of their data
- Also receive data from other GPs who are not in client portfolios (but, presumably, would like to be)
- Private Investments Database contains fund cash flows and residual values

■ Pitchbook and Preqin

- Primary business model is supplying information to fee paying customers
- To obtain fund level data, PitchBook and Preqin gather information from public sources and make direct requests for submission
 - Freedom Of Information Act (FOIA) requests (or their parallel outside the U.S.) requiring LPs to reveal info are used, combined with requests to LPs and GPs to voluntarily provide info
- Roughly half of Preqin's data comes from GPs
- Some funds report only IRRs, some report cash flows as well
- Individual funds are named

Figure 1: Buyouts Sample Sizes, Vintage Years 1984-2010

This figure shows North American buyout sample sizes by vintage year for the four data providers (Burgiss, Cambridge Associates, PitchBook and Preqin) over the period 1984-2010.



Buyout Fund coverage
similar in all four databases

Panel A : Buyout Funds

Vintage Year	Total Fund Commitments	Commitments (\$bn) by data provider				Fraction of North American Buyout Total			
		Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin
1984	1.8	1.2	-	0.1	1.2	0.69	-	0.06	0.70
1985	2.4	0.4	-	0.3	1.2	0.19	-	0.12	0.50
1986	6.8	3.1	2.1	1.8	1.4	0.46	0.30	0.27	0.21
1987	14.7	4.6	7.3	6.5	7.0	0.32	0.50	0.45	0.48
1988	10.7	4.3	6.0	1.1	6.7	0.41	0.56	0.10	0.63
1989	11.9	4.7	3.1	2.4	4.0	0.39	0.26	0.20	0.34
1990	4.8	0.8	1.3	-	3.5	0.16	0.26	-	0.74
1991	5.6	1.9	1.5	1.8	1.7	0.34	0.27	0.33	0.30
1992	8.1	4.1	2.9	2.1	5.7	0.50	0.35	0.27	0.71
1993	9.9	3.1	4.5	6.8	5.7	0.32	0.46	0.68	0.57
1994	15.2	11.2	10.2	6.0	13.1	0.74	0.68	0.39	0.86
1995	22.5	15.8	12.0	8.1	10.0	0.70	0.53	0.36	0.45
1996	19.7	7.0	12.1	15.8	7.9	0.36	0.61	0.80	0.40
1997	41.5	21.7	23.4	28.1	29.6	0.52	0.56	0.68	0.71
1998	61.9	40.8	43.1	36.0	39.8	0.66	0.70	0.58	0.64
1999	43.4	34.2	30.9	43.9	32.4	0.79	0.71	1.01	0.75
2000	79.6	67.9	68.7	68.7	76.6	0.85	0.86	0.86	0.96
2001	51.5	30.1	26.5	24.1	23.5	0.58	0.51	0.47	0.46
2002	43.1	14.7	18.6	29.0	14.9	0.34	0.43	0.67	0.34
2003	28.4	22.2	28.9	29.0	30.5	0.78	1.02	1.02	1.07
2004	57.4	35.7	34.4	43.6	27.1	0.62	0.60	0.76	0.47
2005	110.8	70.6	64.7	74.9	68.9	0.64	0.58	0.68	0.62
2006	148.8	127.9	146.1	141.8	159.7	0.86	0.98	0.95	1.07
2007	244.6	141.6	122.0	175.9	125.2	0.58	0.50	0.72	0.51
2008	181.0	97.6	107.6	117.0	85.4	0.54	0.59	0.65	0.47
2009	58.4	16.4	18.5	61.8	30.5	0.28	0.32	1.06	0.52
2010	61.2	40.2	18.9	19.5	26.8	0.66	0.31	0.32	0.44
Total 1984-89	48.2	18.4	18.5	12.3	21.6	0.38	0.38	0.26	0.45
Total 1990-99	232.6	140.7	141.9	148.6	149.5	0.60	0.61	0.64	0.64
Total 2000-10	1064.8	664.8	655.0	785.3	669.0	0.62	0.62	0.74	0.63
Total	1345.6	824.0	815.4	946.2	840.1	0.61	0.61	0.70	0.62

Buyout Fund coverage
similar in all four databases

How is performance measured?

- The industry focuses on two metrics
 - Annualized IRR (net of fees)
 - Multiple of Invested Capital (MIC) or Total Value to Paid-In-Capital (TVPI)
 - $\text{Total Value Returned/Invested Capital}$
 - $(\text{Distributed Value} + \text{Residual Value})/(\text{Capital calls} + \text{Fees})$
- Each has its drawbacks
 - Net IRR
 - Absolute (not relative) - does not control the market
 - Is sensitive to sequencing of investments
 - Multiple of Invested Capital
 - Absolute (not relative) - does not control for the market

How is performance measured?

- More important question, how does private equity perform relative to (or as an alternative to) public equity?
- A third method – KS PME (Public Market Equivalent)
 - Kaplan and Schoar (2005) introduced PME
 - = market-adjusted multiple
 - PME = Public Market Equivalent
 - $\frac{\sum (\text{S\&P 500 discounted value of cash outflows})}{\sum (\text{S\&P 500 discounted value paid in capital})}$
 - Compares fund to investment in S&P (including dividends)
 - If PME > 1, then LPs did better than S&P 500
- Pros and cons:
 - Pro: Does control for the market
 - Pro: Not sensitive to investment sequence

How is performance measured?

	Fund A	Fund B	Fund C	Fund A'
Year				
0	-12	-20	-20	-8
1	23	21	0	0
2	-8	0	0	-12
3	0	5	0	23
4	0	0	33	0
5	0	0	0	0
IRR	50%	22%	14%	8%
MOIC	1.17	1.30	1.67	1.17

What has performance been on average?

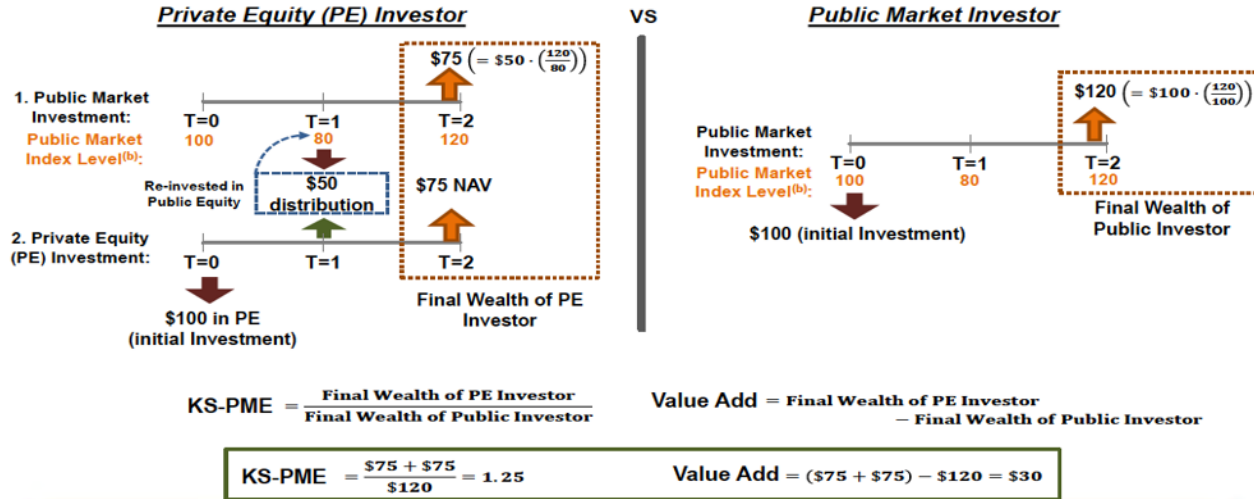
	Fund A	Fund B	Fund C	Fund A'
Year				
0	-12	-20	-20	-8
1	23	21	0	0
2	-8	0	0	-12
3	0	5	0	23
4	0	0	33	0
5	0	0	0	0
IRR	50%	22%	14%	8%
MOIC	1.17	1.30	1.67	1.17
PME (at 0%)	1.17	1.30	1.67	1.17
PME (at 10%)	1.14	1.14	1.14	0.96

Does anyone use KS PME?

- CalPERS (to explain PE value creation):

Private Equity Workshop Presentation

Kaplan-Schoar Public Market Equivalent (PME^(a)) Analysis

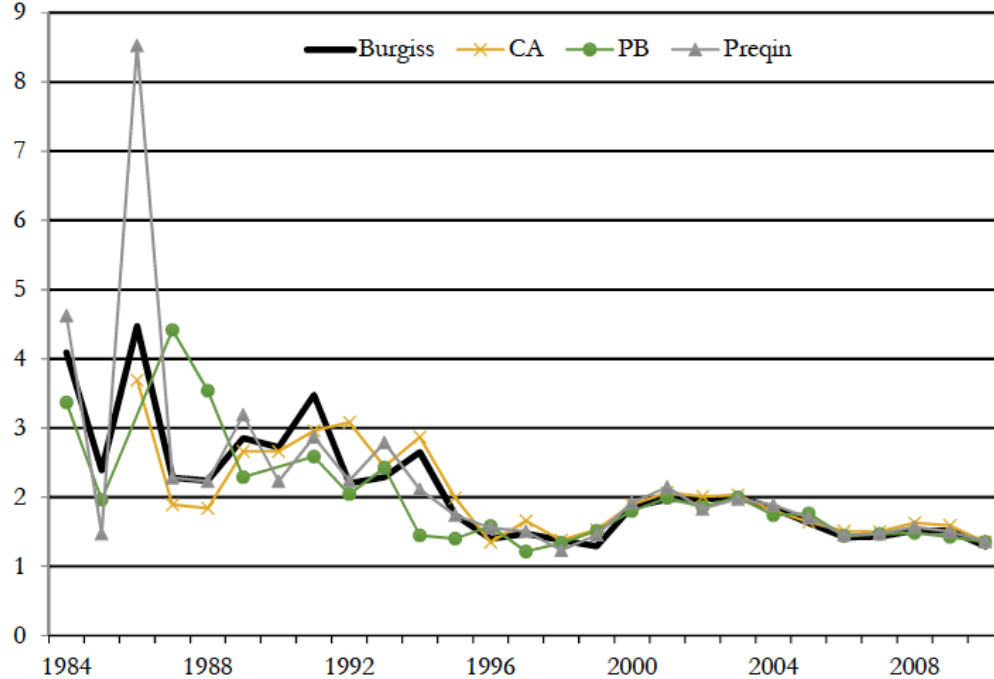


Summary

- IRR an inferior and, potentially misleading measure
 - Sensitive to early investments/sequencing
- MOIC is better measure
 - Does not adjust for movements in equity markets
 - Excellent measure in low interest rate/low stock return environment
 - Not so good when equity markets move a lot in one direction (or another)
- KS PME is better measure
 - Effectively a market-adjusted MOIC
 - Explicitly adjusts for movements in equity markets
 - Explicitly matches PE investment cash flows to investment in public markets
- None of these adjust for leverage

What has average performance been by vintage year?

- Weighted average MOICs



What has average performance been by vintage year?

Panel A: Buyout Funds

Vintage Year	Weighted Average Multiple				Average Multiple				Median Multiple			
	Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin
2000	1.86	1.89	1.80	1.92	1.75	1.83	1.75	1.97	1.73	1.73	1.75	1.90
2001	1.97	2.07	1.99	2.14	1.81	1.94	1.82	2.03	1.91	2.01	1.69	1.93
2002	1.97	2.01	1.86	1.83	1.86	1.74	1.75	1.63	1.85	1.89	1.86	1.76
2003	2.00	2.03	2.00	1.98	2.05	1.84	1.74	1.73	1.76	1.68	1.62	1.65
2004	1.84	1.80	1.74	1.89	1.67	1.74	1.69	1.88	1.65	1.71	1.50	1.77
2005	1.63	1.64	1.76	1.70	1.67	1.64	1.54	1.71	1.53	1.50	1.45	1.56
2006	1.42	1.51	1.44	1.45	1.41	1.59	1.45	1.53	1.48	1.56	1.50	1.53
2007	1.43	1.50	1.47	1.47	1.44	1.50	1.48	1.60	1.40	1.46	1.45	1.53
2008	1.52	1.63	1.48	1.57	1.45	1.67	1.48	1.53	1.43	1.49	1.42	1.44
2009	1.52	1.59	1.43	1.50	1.42	1.61	1.44	1.49	1.38	1.60	1.38	1.43
2010	1.29	1.35	1.35	1.36	1.30	1.42	1.30	1.37	1.29	1.33	1.30	1.35
Average 1980s	3.05	2.52	3.12	3.72	2.74	2.36	2.59	3.74	2.47	2.05	2.57	2.69
Average 1990s	2.06	2.19	1.73	1.97	2.02	1.99	1.86	2.04	1.84	1.83	1.80	1.91
Average 2000s	1.68	1.73	1.66	1.71	1.62	1.68	1.59	1.68	1.58	1.63	1.54	1.62
Average	2.13	2.04	1.98	2.25	2.02	1.91	1.88	2.27	1.88	1.78	1.84	1.97
All Funds	1.61	1.68	1.57	1.65	1.66	1.73	1.60	1.86	1.51	1.60	1.49	1.63

What has average performance been by vintage year?

- IRRs

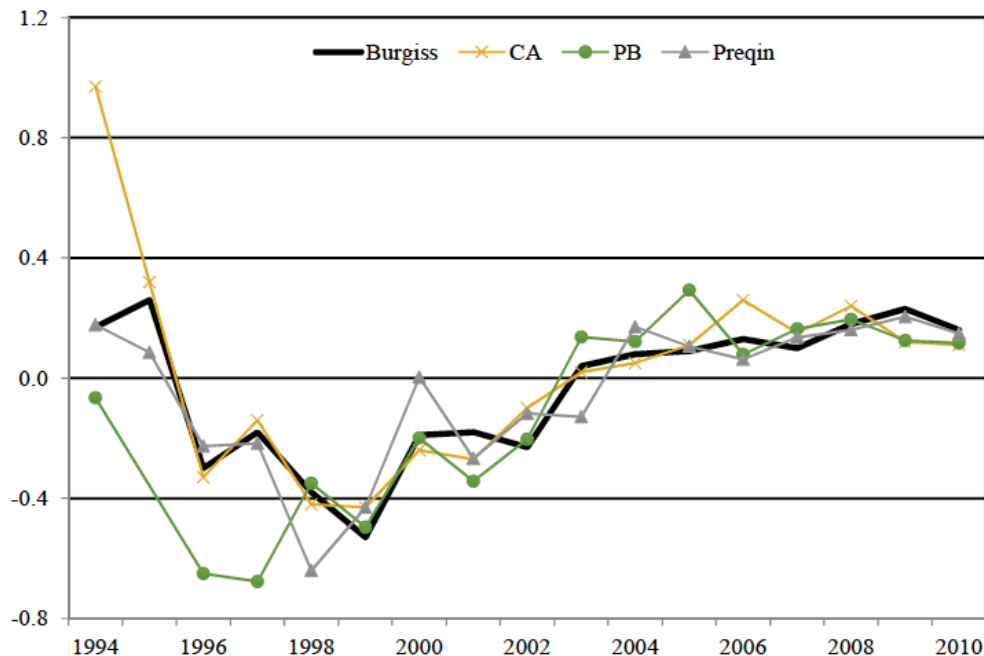
Vintage Year	Weighted Average IRR				Average IRR				Median IRR			
	Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin
2000	15.3	15.7	14.4	15.8	12.8	13.0	12.4	16.1	13.2	12.9	12.2	15.4
2001	19.2	20.5	20.9	25.2	19.5	19.9	16.3	20.1	17.3	20.7	13.2	19.5
2002	18.8	18.7	18.0	19.3	16.1	10.6	13.0	14.1	14.9	15.7	13.6	13.4
2003	21.2	20.9	22.0	19.7	16.4	17.0	15.5	12.5	13.6	14.0	13.1	15.0
2004	15.3	12.9	12.2	16.9	12.5	11.7	11.1	14.7	11.9	11.5	9.8	12.6
2005	9.8	9.5	11.6	11.0	10.8	9.7	9.0	11.8	9.5	8.8	8.4	10.3
2006	7.4	8.4	7.6	7.5	7.8	10.5	6.6	8.6	8.2	9.4	8.3	9.7
2007	10.5	11.4	10.1	11.2	10.4	11.6	10.4	13.2	10.4	11.8	10.0	12.6
2008	15.8	16.7	13.9	16.2	13.9	17.0	9.9	14.1	13.7	15.9	12.2	14.0
2009	18.2	18.4	15.7	17.6	15.8	20.4	14.7	18.6	14.1	21.0	14.9	14.8
2010	15.5	15.1	14.3	15.5	15.5	18.1	9.8	15.9	13.9	15.3	13.0	15.1
Average 1980s	22.5	16.2	14.8	22.4	19.1	15.2	17.7	29.1	16.8	14.6	17.7	21.1
Average 1990s	16.9	20.8	15.6	17.3	15.8	17.4	9.5	17.3	14.9	15.5	10.7	15.6
Average 2000s	15.2	15.3	14.6	16.0	13.8	14.5	11.7	14.5	12.8	14.3	11.7	13.8
Average	17.4	17.6	15.0	17.9	15.7	15.8	12.2	18.8	14.5	14.8	12.7	16.1
All funds	12.4	13.0	11.9	12.8	12.4	13.4	10.4	14.9	11.2	12.1	10.8	13.0

Summary

- MOICs and IRRs similar in all four databases
- Slightly higher in CA/Preqin
 - Positive selection bias?

What has average performance been by vintage year?

- North America vs. Europe



- Have PE/Buyout funds of vintages 2006 to 2010 beaten the S&P 500?

What has performance been on average?

- PMEs

Panel A : Buyout Funds				
Vintage Year	Burgiss		Cambridge	
	KS-PME		"Market adjusted" multiple	
	Cap-Weighted	Pooled	using Cap-Wgt. TVPI	using pooled TVPI
1995	1.17	1.19	1.34	1.37
1996	1.05	1.00	1.01	1.01
1997	1.27	1.27	1.46	1.46
1998	1.31	1.31	1.30	1.30
1999	1.13	1.14	1.38	1.37
2000	1.48	1.48	1.55	1.55
2001	1.48	1.48	1.62	1.61
2002	1.51	1.50	1.51	1.49
2003	1.55	1.56	1.60	1.61
2004	1.45	1.44	1.36	1.35
2005	1.26	1.25	1.24	1.24
2006	1.02	1.02	1.06	1.06
2007	0.99	0.99	0.99	0.99
2008	1.03	1.02	1.08	1.05
2009	1.01	1.03	1.04	1.04
2010	0.93	0.93	0.95	0.95
Average 1980s	1.26	1.26	1.19	1.20
Average 1990s	1.25	1.24	1.43	1.43
Average 2000s	1.25	1.25	1.27	1.27
Average	1.25	1.25	1.32	1.32

Similar results in Burgiss and CA in 2000s. CA higher in 1990s

Summary

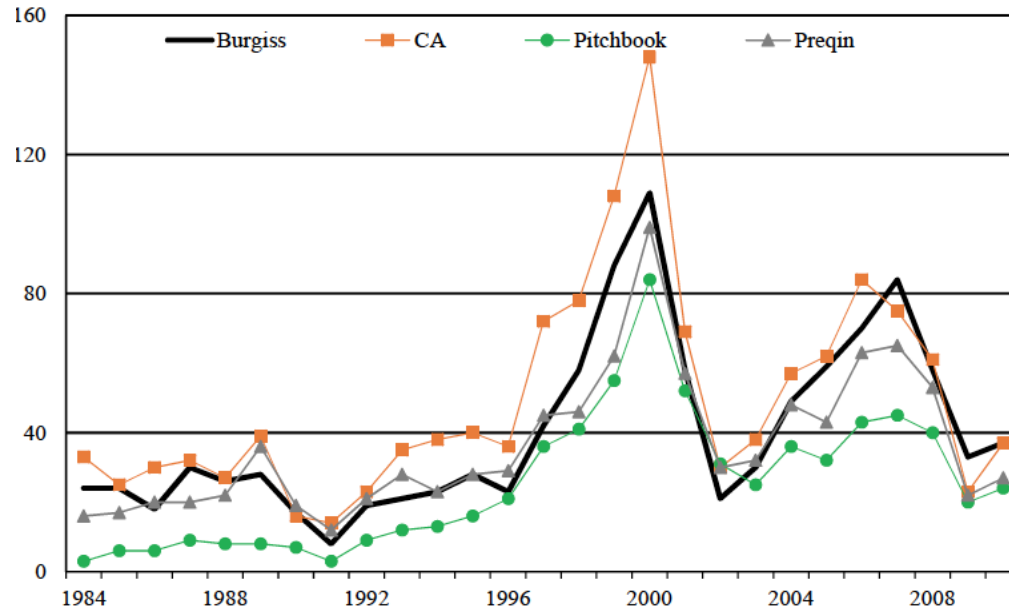
- All four databases have similar coverage levels
 - Funds
 - AUMs
- All four databases give similar results
 - Particularly for vintages post-2000
- PE performance has beaten S&P 500 over last 25 years, but not so much for vintages since 2006

- What about Venture Capital?

Figure 2: Venture Capital Sample Sizes, Vintage Years 1984-2010

This figure shows North American venture capital sample sizes by vintage year for the four data providers (Burgiss, Cambridge Associates (CA), PitchBook and Preqin) over the period 1984-2010.

CA and Burgiss have superior coverage



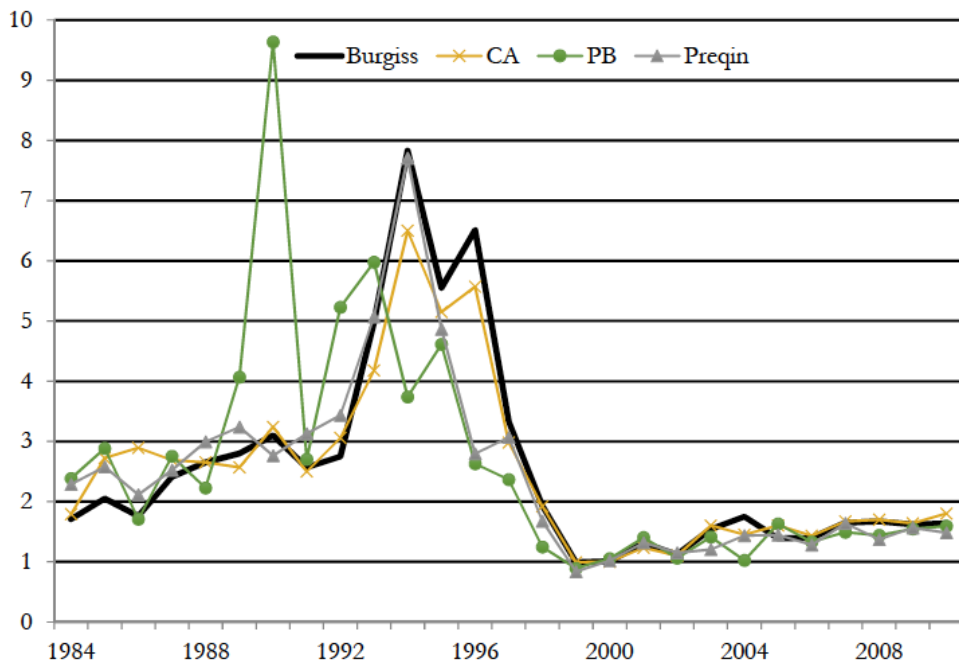
Panel B : Venture Capital Funds

Vintage Year	Total Fund Commitments	Commitments (\$bn) by data provider				Fraction of North American Venture Total			
		Burgiss	CA	Pitchbook	Preqin	Burgiss	CA	Pitchbook	Preqin
1984	3.0	1.5	1.7	0.1	0.9	0.49	0.56	0.04	0.28
1985	1.8	1.0	0.9	0.3	0.6	0.56	0.52	0.18	0.33
1986	2.0	1.1	2.7	0.5	0.8	0.52	1.35	0.27	0.38
1987	3.1	2.0	2.0	0.5	1.5	0.65	0.63	0.18	0.48
1988	2.1	1.6	1.5	0.5	1.4	0.79	0.72	0.27	0.67
1989	2.8	1.6	3.7	0.3	1.2	0.57	1.35	0.12	0.43
1990	1.7	1.1	0.8	0.4	1.1	0.67	0.47	0.22	0.69
1991	1.4	0.6	0.7	0.4	0.8	0.44	0.51	0.26	0.55
1992	2.6	2.0	1.8	1.1	1.8	0.78	0.71	0.42	0.70
1993	2.9	2.4	3.1	1.4	1.7	0.84	1.06	0.47	0.60
1994	4.2	2.0	2.6	1.2	1.9	0.49	0.61	0.30	0.46
1995	6.1	2.8	3.3	2.1	2.6	0.46	0.53	0.34	0.43
1996	7.9	3.1	4.0	4.7	3.9	0.39	0.51	0.59	0.50
1997	14.3	6.6	7.7	4.6	5.2	0.46	0.54	0.32	0.37
1998	21.0	11.1	11.4	10.3	8.1	0.53	0.55	0.49	0.39
1999	48.6	28.7	29.9	19.3	19.0	0.59	0.61	0.40	0.39
2000	72.1	41.7	44.1	34.0	35.2	0.58	0.61	0.47	0.49
2001	39.4	20.0	16.8	22.7	21.4	0.51	0.43	0.58	0.54
2002	10.8	6.3	6.0	5.3	7.3	0.58	0.55	0.49	0.68
2003	9.2	6.7	6.4	5.9	5.9	0.72	0.70	0.64	0.64
2004	17.9	13.1	11.1	8.6	9.2	0.73	0.62	0.48	0.51
2005	25.7	18.6	15.0	9.8	10.3	0.72	0.58	0.38	0.40
2006	25.1	26.6	24.6	20.2	22.3	1.06	0.98	0.80	0.89
2007	33.1	29.8	21.2	19.0	20.2	0.90	0.64	0.57	0.61
2008	24.7	21.5	18.8	12.6	15.4	0.87	0.76	0.51	0.62
2009	13.5	14.0	8.5	7.9	8.8	1.04	0.63	0.59	0.65
2010	15.5	12.4	9.3	6.9	7.0	0.80	0.60	0.44	0.45
Total 1984-89	14.7	8.7	12.5	2.4	6.3	0.59	0.85	0.16	0.43
Total 1990-99	110.6	60.4	65.2	45.3	46.2	0.55	0.59	0.41	0.42
Total 2000-10	287.0	210.7	181.9	152.8	163.0	0.73	0.63	0.53	0.57
Total	412.3	279.8	259.6	200.5	215.4	0.68	0.63	0.49	0.52

CA and Burgiss have superior coverage

What has average performance been by vintage year?

- Weighted average MOICs



What has average performance been by vintage year?

Panel B: Venture Capital Funds

Vintage Year	Weighted Average Multiple				Average Multiple				Median Multiple			
	Burgiss	CA	Pitchbook	Prequin	Burgiss	CA	Pitchbook	Prequin	Burgiss	CA	Pitchbook	Prequin
1994	7.83	6.50	3.74	7.71	4.92	3.86	3.13	4.79	2.91	2.16	2.23	2.91
1995	5.55	5.15	4.61	4.86	5.40	4.52	2.60	3.87	2.53	2.53	2.74	2.47
1996	6.51	5.57	2.63	2.80	5.92	4.55	3.67	2.85	3.21	2.09	2.01	1.77
1997	3.33	2.98	2.37	3.07	3.56	2.79	2.16	2.82	1.76	1.65	1.12	1.93
1998	1.93	1.92	1.25	1.67	1.86	1.86	1.19	1.58	1.04	1.06	1.22	1.35
1999	0.99	0.99	0.89	0.83	0.94	0.94	0.92	0.93	0.82	0.83	0.83	0.84
2000	1.01	1.00	1.05	1.02	0.97	0.95	1.02	1.19	0.87	0.82	0.97	1.01
2001	1.31	1.23	1.40	1.32	1.40	1.31	1.14	1.32	1.18	1.14	1.06	1.23
2002	1.12	1.10	1.06	1.15	1.09	1.05	1.04	1.05	1.11	1.00	0.94	1.06
2003	1.54	1.60	1.41	1.20	1.30	1.62	1.12	1.32	1.08	1.18	1.22	1.22
2004	1.75	1.45	1.02	1.44	1.72	1.41	1.04	1.41	1.12	1.10	0.95	1.10
2005	1.39	1.60	1.63	1.44	1.48	1.51	1.78	1.29	1.18	1.18	1.31	1.17
2006	1.40	1.43	1.33	1.28	1.30	1.40	1.18	1.25	1.27	1.35	1.21	1.27
2007	1.65	1.67	1.49	1.64	1.56	1.67	1.56	1.57	1.41	1.61	1.43	1.50
2008	1.67	1.70	1.44	1.37	1.69	1.70	1.48	1.53	1.38	1.42	1.37	1.38
2009	1.62	1.64	1.54	1.56	1.52	1.60	1.44	1.55	1.39	1.60	1.42	1.43
2010	1.64	1.80	1.59	1.48	1.64	1.67	1.51	1.56	1.45	1.44	1.38	1.40
Average 1980s	2.23	2.55	2.67	2.62	2.13	2.23	2.33	2.52	1.85	2.06	2.15	2.28
Average 1990s	3.95	3.61	3.90	3.53	3.56	3.13	3.36	3.16	2.15	2.01	2.04	2.16
Average 2000s	1.46	1.47	1.36	1.35	1.42	1.44	1.30	1.37	1.22	1.26	1.21	1.25
Average	2.56	2.50	2.59	2.44	2.37	2.24	2.29	2.29	1.71	1.71	1.72	1.81
All Funds	1.66	1.69	1.40	1.56	1.97	1.95	1.53	1.94	1.34	1.38	1.21	1.43

What has average performance been by vintage year?

- IRRs

Panel B : Venture Capital Funds

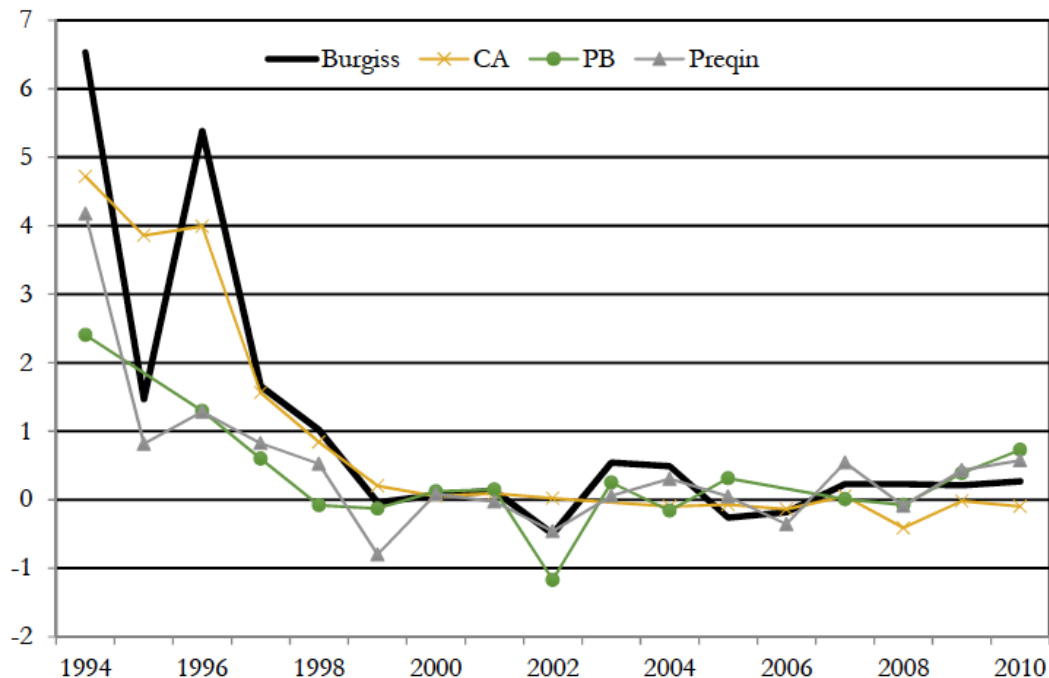
Vintage Year	Weighted Average IRR				Average IRR				Median IRR			
	Burgiss	CA	Pitchbook	Prequin	Burgiss	CA	Pitchbook	Prequin	Burgiss	CA	Pitchbook	Prequin
1994	50.9	44.8	37.3	51.9	37.6	31.8	31.7	36.4	31.0	26.5	27.1	29.8
1995	58.9	54.7	47.5	65.8	57.0	50.1	24.5	58.5	27.7	28.5	15.4	26.9
1996	80.8	71.0	37.2	30.0	67.8	55.1	45.4	37.9	44.9	30.8	24.3	22.7
1997	65.9	63.8	37.9	70.3	60.1	57.9	28.3	56.9	22.6	23.1	8.1	31.9
1998	16.0	25.3	8.6	20.9	15.2	25.8	6.0	15.6	0.7	1.2	1.4	6.3
1999	-3.1	-3.1	-4.4	-4.7	-2.1	-3.7	-4.3	-1.5	-2.5	-2.2	-3.6	-2.5
2000	-0.7	-0.9	0.0	-0.8	-2.0	-3.4	-2.4	-0.5	-2.0	-2.7	-0.4	0.2
2001	2.1	2.8	6.5	4.2	2.3	0.8	-0.8	2.8	3.1	2.2	0.9	3.7
2002	1.5	0.7	-1.9	0.9	0.1	-0.5	-2.3	-1.5	1.8	0.0	-1.3	1.3
2003	3.7	2.7	3.7	3.6	1.2	2.1	-1.5	3.2	1.4	3.4	4.1	4.9
2004	5.1	3.5	-1.5	3.2	3.8	1.7	-2.3	2.2	1.8	1.7	-0.8	1.6
2005	4.7	4.1	9.6	5.3	4.0	2.5	9.0	2.3	3.4	4.4	5.4	4.4
2006	5.9	6.1	0.9	4.7	3.3	5.3	-0.4	3.3	5.0	6.7	4.7	4.6
2007	11.8	11.2	9.3	10.2	10.0	11.7	9.9	9.8	9.9	12.8	8.7	10.1
2008	11.0	14.8	8.7	8.6	10.2	14.0	10.0	10.9	11.7	12.3	11.1	12.0
2009	18.7	19.8	16.7	15.8	15.8	18.3	13.9	16.6	15.4	16.5	14.7	16.5
2010	22.3	25.1	24.1	18.6	22.5	22.0	20.2	21.3	19.7	18.4	12.7	15.5
Average 1980s	13.4	14.8	17.4	19.6	11.0	12.4	12.8	16.2	10.5	11.4	11.3	14.7
Average 1990s	39.4	36.9	30.7	36.7	34.5	32.1	25.6	33.4	21.5	19.4	17.7	21.6
Average 2000s	7.8	8.2	6.9	6.7	6.5	6.8	4.8	6.4	6.5	6.9	5.4	6.8
Average	20.8	20.3	18.1	20.7	17.9	17.4	14.3	18.6	12.9	12.5	11.3	14.0
All funds	10.2	11.0	7.5	9.4	13.0	14.3	8.5	14.4	6.4	7.1	4.7	7.9

Summary

- In 2000s, Burgiss and CA have higher MOICs and IRRs
 - Likely that Pitchbook and Preqin do not have better performing funds
 - Get more of their data from FOIA requests
 - Miss funds that exclude FOIA-able LPs
 - Burgiss and CA more likely to have funds that are not FOIA-able

What has average performance been by vintage year?

- North America vs. Europe



- Have PE/Buyout funds of vintages 2006 to 2010 beaten the S&P 500?

What has performance been on average? PME

- PMEs

Vintage Year	Panel B : Venture Funds			
	Burgiss		Cambridge	
	KS-PME		"Market adjusted" multiple	
	Cap-Weighted	Pooled	Cap-Weighted TVPI	Pooled TVPI
1995	3.14	3.19	3.26	3.27
1996	4.34	4.44	3.98	3.99
1997	2.68	2.68	2.48	2.47
1998	1.74	1.77	1.78	1.77
1999	0.89	0.88	0.90	0.89
2000	0.78	0.78	0.74	0.74
2001	0.91	0.86	0.87	0.86
2002	0.79	0.79	0.71	0.71
2003	1.09	1.07	1.13	1.14
2004	1.23	1.17	0.97	0.97
2005	0.98	0.97	1.11	1.07
2006	0.95	0.96	0.93	0.95
2007	1.08	1.10	1.08	1.10
2008	1.05	1.09	1.06	1.05
2009	1.05	1.06	1.04	1.05
2010	1.13	1.12	1.21	1.20
Average 1980s	0.98	0.96	1.11	1.11
Average 1990s	2.26	2.26	2.27	2.24
Average 2000s	1.00	1.00	0.99	0.99
Average	1.46	1.46	1.49	1.48

CA and Burgiss have identical PMEs

Summary

- For VC, Burgiss and CA are superior to Preqin and Pitchbook
 - More funds
 - More AUMs
- Burgiss and CA give similar results
 - Preqin and Pitchbook are lower, likely missing best-performing funds that do not take LPs who are FOIA-able
- VC performance has beaten S&P 500 since 2003 vintages

Thank You!

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Part I

Benchmarking: Tips and Tricks

Allen Waldrop, Managing Director, LP Capital
Advisors, a Pavilion Company

Benchmark provider review

- Every benchmark provider has merits and considerations
- Determine how you want to use benchmark and then review various factors for the right benchmark fit
 - Key is for investors to determine what they are attempting to measure and evaluate, then select the appropriate tools and methodologies
- Potential variables to review include:
 - Sample Size
 - Strategy Coverage
 - Geographic Coverage
 - Transparency
 - Dispersion of Returns
 - Downloadable Data
 - Cost
 - Benchmark Recognition

Sample evaluations

Benchmark Comparison - Number of Funds (Global All PE)

	<i>Provider A</i>	<i>Provider B</i>	<i>Provider C</i>	<i>Provider D</i>
Total (1990-2014)	4,016	2,816	2,347	2,768
Total (2000-2010)	2,288	1,531	1,608	1,876
(Using 12/31/14 benchmarks)				

Benchmark Comparison - IRR Average Deviation (Global All PE)

Average Deviation across All Benchmarks' IRR (1990-2014 VYs)

	Provider A			Provider B			Provider C			Provider D		
	Q1	Med	Q3	Q1	Med	Q3	Q1	Med	Q3	Q1	Med	Q3
Total	0.1%	-1.0%	-1.8%	2.5%	1.3%	0.6%	-1.1%	-0.1%	0.9%	-1.5%	0.0%	0.6%
	-0.9%			1.5%			-0.1%			-0.3%		

Average Deviation across All Benchmarks' IRR (2000-2010 VYs)

Total	0.1%	-0.3%	-1.4%	3.0%	1.7%	0.9%	-0.9%	-0.8%	0.3%	-2.2%	-0.7%	0.2%
	-0.5%			1.9%			-0.5%			-0.9%		
(Using 12/31/14 benchmarks)												

Benefits of transparency in a Benchmark

- Pitchbook and Preqin allow users to see the fund names and performance, whereas Burgiss and Cambridge Associates do not have fund names
- Investors can use the transparency to create different analysis:
 - Peer comparisons by looking at funds similar to strategy
 - Check performance reported by other investors

Case Study #1

- You are evaluating a sector-focused fund, what would you rather use for a relative comparison?
 - A group of five similar sector-focused funds
 - A broad group of buyout funds

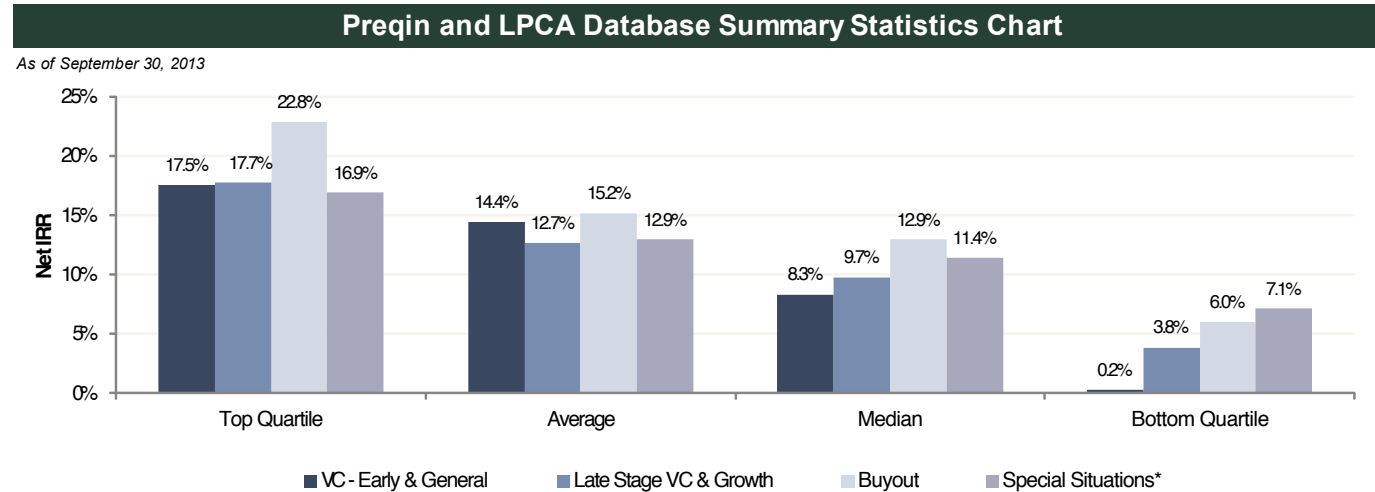
- Takeaway
 - For sector focused strategies a small sample size of similar funds can provide additional insights into a manager's performance

Case Study #2

- You are evaluating a fund's performance by calculating performance from the net cash flows. You noted that performance is reported higher in Pitchbook or Preqin than that calculated by cash flows. What could be the cause of the difference?
- Under the same scenario, the performance reported by Pitchbook or Preqin is lower than that calculated by net cash flows. What could be the cause of the difference?
- Takeaway
 - Performance differences could highlight areas that need further analysis, e.g., some LPs may have different economic terms or calculate multiples differently
 - The net cash flows may include the GP commitment

Use Benchmark information for broad industry information

- Benchmarks can be used to understand historic return differences in strategy



Source: Preqin and the LPCA Database. Funds with vintage years 1969 to 2008.

* Special Situations includes Distressed Debt, Special Situations, Mezzanine, and Secondaries.

When to begin benchmarking funds?

- Private equity returns are volatile during the first few years of a fund's existence. When is the right time to begin benchmarking private equity funds?
- What could be the impact of using both peer comparison and PME's on short-term returns compared to long-term returns?
- Takeaway
 - We tend to not show benchmarking until a fund has been investing for three years. Benchmarking tends to be more meaningful with a longer history as short-term comparisons can be volatile and change from quarter-to-quarter

Do not be overly reliant on benchmarks in analysis

- Performance remains an important consideration in manager selection, but not the sole consideration
 - A number of manager-specific factors can increase persistence (e.g., access to good investments, resource/operational capabilities and reputational benefits leading to better terms)
 - Factors that led to previous top quartile performance can change over time (e.g., key person leaving, changes in strategy, terms creating misalignment with investors)
- In-depth Due Diligence process should evaluate the potential to generate future top quartile performance by examining performance, team, strategy and alignment
- Investors could selectively evaluate managers with first or second funds, but performance evaluation should include previous track record of investments before they joined the organization

Appendix

Benchmark approaches

- There are two main ways investors benchmark their private equity portfolio:
 - Peer Comparison:
 - Compare performance against other private equity funds often reported by a benchmark provider
 - Primarily used to compare managers within a specific strategy and/or evaluate the investment selection decisions in the program
 - Public Market Comparison:
 - Compare performance against an index of publicly traded securities
 - Primarily used to assess whether the manager is generating value through active management and/or assess whether private equity overall is delivering the value expected given the higher fees and liquidity constraints

Overview

- In addition to performance evaluations on an absolute basis, performance measures can be evaluated on a relative basis against other private equity funds or public markets
- Benchmarking provides a standard to measure relative value generated by managers
- There is no perfect private equity benchmark and all have strengths and weaknesses
 - Key is for investors to determine what they are attempting to measure and evaluate, then select the appropriate tools and methodologies
- Benchmarks continue to evolve, with new providers and methodologies emerging and other providers exiting the market

PE characteristics

Private Equity Performance Comparison	
Private Equity	Traditional Asset Classes
IRR is typically used over time-weighted returns (“TWRs”) since contributions/distributions are controlled by the investment manager	TWRs are typically used over IRRs since contributions / distributions are controlled by the investor
Valuations are not observable and reliant on a number of assumptions	Valuations are observable and typically easy to obtain from public sources
Benchmarks are typically delayed by three to four months following quarter-end and do not reflect an investable portfolio	Benchmarks are readily available on a daily basis and represent an investable portfolio
Capital is deployed over time and typically takes years to generate a meaningful return (i.e., “J-curve effect”)	Capital can be deployed immediately

PE Benchmarks

Private Equity Benchmark Characteristics	
Shortfall	Description
Lack of observable information	Private equity funds are not required to report performance and benchmark providers have to rely on self reporting or publicly available information
Lack of transparency	The funds included in the benchmark are often not identified by the benchmark provider
Not investable	The benchmark cannot be replicated to give private equity investors a passive option
Delayed publication	Benchmarks are only provided on a quarterly basis and are often delayed three to four months after quarter-end
May not be reflective of fund/ portfolio characteristics	The benchmark may not consist of funds similar to the fund or portfolio being compared (i.e., benchmark consists of mostly small funds being compared to portfolio of mostly large funds)
Survivor bias	Typically, poor performing funds stop reporting performance to benchmark providers so that benchmark performance changes only reflects those funds who have continued reporting

Peer comparison overview

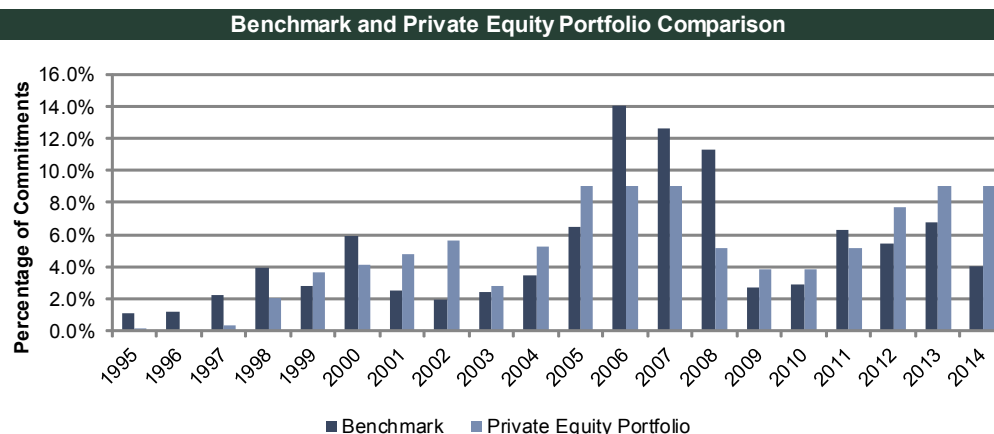
- Benchmarking is used to understand the relative performance of a fund manager and a private equity portfolio
 - Comparisons often done by vintage year and by strategy to compare to a peer group that had similar investment opportunities and investment periods
 - Because of the wide dispersion of private equity returns, benchmark comparisons are often reported as quartile rankings
 - Benchmark providers report net of fees performance
- Benchmarks can also be helpful to understand trends in private equity performance
- There are a number of private equity benchmark providers, including Burgiss, Cambridge Associates, Pitchbook and Preqin
- Compared to public markets indices and benchmarks, private equity benchmarks have many shortfalls (discussed in the following slides) but are currently the best source available to complete a relative performance evaluation to other private equity funds

Advantages/disadvantages of peer comparison

Peer Comparison	
Advantages	Disadvantages
• Serves as a “pure” private equity asset class measurement • Provides a more relevant comparison by incorporating the J-curve pattern of returns • Easy to analyze and report to decision makers	• Built-in bias of IRRs (may overstate or understate performance in the short-run) • Not a complete set of private equity manager data • May not reflect private equity managers that are in target universe of the investor’s private equity program • Data is reported on a lag posing challenges for interim period calculations • Data set may be inadequate due to size, or composition of managers may not be entirely comparable

Total performance comparison

- The advantage of this approach is providing one comparison of the overall portfolio
- There are a number of considerations to be aware of when using this comparison:
 - Benchmark may not reflect strategies included in the program (e.g., a private equity benchmark may include mezzanine and energy funds, which are not a focus of the private equity portfolio)
 - Benchmark may not reflect the vintage year weightings of the private equity portfolio (e.g., a program recently made a large amount of recent commitments that are in the bottom of the “J-curve”)



Comparison by vintage year

Benchmark Comparison - By Vintage Year

As of June 30, 2015

Vintage Year	Overall					Buyout		Venture Capital		Special Situations	
	Funds	Net IRR	Quartile	Net Mult.	Quartile	Net IRR	Net Mult.	Net IRR	Net Mult.	Net IRR	Net Mult.
2007	11	15.0%	1	1.71x	1	20.0%	2.10x	4.2%	1.16x	12.3%	1.46x
2008	17	16.4%	2	1.62x	1	18.0%	1.65x	13.8%	1.54x	11.5%	1.64x
2009	4	20.1%	2	1.65x	2	-	-	20.1%	1.65x	-	-
2010	11	20.9%	2	1.53x	2	22.4%	1.74x	-	-	18.4%	1.49x
2011	8	24.3%	1	1.64x	1	26.2%	1.83x	30.4%	2.01x	5.3%	1.05x

Source: General Partner provided information and respective private equity benchmarks.

Green = First quartile; Yellow = Second quartile; Orange = Third quartile; Red = Fourth quartile.

Individual fund comparison

■ All Private Equity Benchmark Comparison

As of MM/DD/20YY

Preqin North America All Private Equity														
Initial Funds (19YY)			Fund III (19YY)			Fund IV (19YY)			Fund V (20YY)			Fund VI (20YY)		
Net			Net			Net			Net			Net		
IRR	Mult.		IRR	Mult.		IRR	Mult.		IRR	Mult.		IRR	Mult.	
34.4%	X	2.80x	24.1%	X	2.62x	15.7%	X	1.84x	13.3%	X	1.71x	15.0%	X	1.58x
18.2%		1.68x	14.3%	X	1.70x	9.6%		1.45x	7.4%		1.35x	10.1%	X	1.36x
10.0%		1.18x	5.0%		1.27x	(0.8%)		0.94x	1.8%		1.04x	6.2%	X	1.20x

Source: Firm-provided materials and Preqin North America All PE benchmarks for the period ending Month DD, 20YY, pulled as of Month DD, 20YY.

Note: Preqin will revise benchmarks as additional funds report and quartile cut-offs may change.

Questions?



Thank You!

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