

PASERS Private Equity Vintage Year PME Comparison<sup>1,2</sup>

Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR	Direct Alpha PME <sup>3,4</sup>
1980	\$2.0	\$2.0	\$0.6	\$0.0	(10.3%)	N/A
1985	\$38.0	\$38.0	\$70.1	\$0.0	9.2%	(5.1%)
1987	28.0	21.0	61.6	-	19.0%	5.0%
1988	27.7	27.7	42.4	-	10.2%	(4.7%)
1989	25.5	24.6	32.4	-	11.8%	(3.5%)
1990	23.3	23.3	53.9	-	20.3%	2.1%
1991	21.1	23.2	28.5	-	15.3%	(5.2%)
1992	22.5	22.5	28.6	0.9	23.4%	4.2%
1993	255.0	275.8	543.5	-	36.4%	12.2%
1994	129.9	127.9	185.1	-	16.1%	(1.4%)
1995	206.6	192.9	258.9	-	32.7%	13.2%
1996	280.2	286.7	321.7	0.2	14.1%	7.7%
1997	800.6	799.0	1,072.4	0.2	12.2%	8.2%
1998	572.5	545.5	539.9	4.1	2.3%	0.1%
1999	1,243.0	1,209.4	1,647.0	11.9	6.7%	4.1%
2000	1,649.6	1,662.0	2,441.4	73.0	9.8%	5.4%
2001	783.9	766.9	1,194.6	67.0	13.4%	6.5%
2002	467.0	471.8	833.1	31.2	17.1%	9.2%
2003	484.0	459.0	703.3	34.3	12.6%	5.4%
2004	761.0	752.2	1,154.8	239.8	13.0%	7.0%
2005	1,410.9	1,419.1	2,033.4	266.4	10.3%	3.3%
2006	1,972.2	1,943.8	2,744.1	346.7	8.8%	0.6%
2007	1,461.0	1,437.5	1,787.0	406.7	8.5%	(1.9%)
2008	896.2	898.6	1,135.2	330.9	12.1%	(1.8%)
2009	106.4	99.5	94.9	31.6	4.7%	(9.1%)
2010	155.0	143.0	119.2	76.7	7.1%	(6.2%)
2011	203.5	207.5	184.7	171.7	15.1%	1.7%
2012	423.0	352.3	230.0	277.1	12.4%	(1.0%)
2013	381.0	346.6	226.8	309.1	16.0%	3.8%
2014	360.4	281.6	99.6	288.6	16.7%	3.0%
2015	665.0	450.1	98.7	488.6	17.9%	2.4%
2016	543.4	270.4	30.4	303.7	16.2%	3.2%
2017	720.7	66.6	9.5	62.2	NM	NM
2018	296.5	19.4	0.5	21.0	NM	NM
<b>Total PE Portfolio</b>	<b>\$17,416.6</b>	<b>\$15,667.4</b>	<b>\$20,008.0</b>	<b>\$3,843.7</b>	<b>12.3%</b>	<b>3.6%</b>

**Disclosures**

1. As of June 30, 2018.
2. Investments less than two years are not considered relevant, therefore vintage years 2017 and 2018 have been excluded from this analysis.
3. S&P 500 benchmark was used for PME Direct Alpha comparisons.
4. Returns presented represent outperformance or underperformance of PASERS performance compared to the S&P 500.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

PASERS Private Equity Vintage Year PME Comparison<sup>1,2</sup>

Strategy							Direct Alpha PME <sup>3,4</sup>
Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR		
Buyout							
1985	\$5.0	\$5.0	\$12.1	\$0.0	12.8%		(2.1%)
1988	12.5	12.5	14.9	-	11.7%		(6.1%)
1989	10.0	9.7	24.2	-	30.0%		13.3%
1990	5.0	5.1	11.6	-	13.8%		(2.0%)
1991	21.1	23.2	28.5	-	15.3%		(5.2%)
1993	160.0	180.6	450.1	-	37.3%		13.6%
1994	20.0	20.0	68.1	-	34.4%		14.5%
1995	145.0	131.4	182.3	-	42.2%		19.8%
1996	125.0	131.4	166.4	0.2	6.2%		3.0%
1997	564.9	563.7	908.3	0.1	12.7%		9.2%
1998	382.5	348.4	374.7	0.1	3.6%		1.7%
1999	937.2	905.5	1,411.0	7.1	9.9%		7.1%
2000	953.9	957.2	1,896.6	14.0	18.9%		13.5%
2001	207.0	206.5	449.6	11.7	21.3%		13.5%
2002	287.0	302.3	620.7	20.0	22.5%		14.6%
2003	299.0	302.4	510.0	22.4	15.4%		9.0%
2004	448.5	443.2	781.5	23.2	14.3%		9.8%
2005	872.9	887.8	1,338.2	135.4	9.9%		3.1%
2006	1,391.4	1,394.6	2,037.7	219.6	7.8%		(0.3%)
2007	878.2	873.2	1,066.0	278.0	7.8%		(3.7%)
2008	596.6	619.9	896.4	201.0	13.5%		(0.4%)
2009	106.4	99.5	94.9	31.6	4.7%		(9.1%)
2010	65.0	55.5	62.5	17.9	9.4%		(3.8%)
2011	163.5	167.1	153.5	122.2	14.5%		2.3%
2012	348.0	291.0	144.0	261.3	10.9%		0.5%
2013	131.0	111.8	90.2	99.8	25.1%		10.9%
2014	312.4	249.5	92.3	255.8	15.7%		3.0%
2015	420.0	261.5	57.8	273.1	15.6%		1.6%
2016	393.4	221.0	30.1	240.7	15.2%		0.8%
2017	620.7	55.6	9.5	51.7	NM		NM
2018	150.0	7.3	(0.2)	7.6	NM		NM
<b>Total Buyout</b>	<b>\$11,033.1</b>	<b>\$9,843.6</b>	<b>\$13,983.4</b>	<b>\$2,294.4</b>	<b>14.3%</b>		<b>6.6%</b>

PASERS Private Equity Vintage Year PME Comparison<sup>1,2</sup>

Strategy						Direct Alpha
Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR	PME <sup>3,4</sup>
Special Situations						
1994	\$49.9	\$47.9	\$80.1	\$0.0	15.2%	(4.2%)
1995	43.6	43.4	63.2	-	10.1%	(1.9%)
1996	60.0	59.5	86.9	-	6.4%	3.5%
1997	40.0	40.0	60.4	-	8.6%	7.1%
1998	40.0	39.5	52.6	-	8.2%	7.2%
1999	70.0	69.5	123.3	0.3	13.2%	12.8%
2000	60.0	60.0	90.3	-	12.0%	20.3%
2001	287.6	274.2	511.1	2.3	21.3%	14.3%
2002	120.0	109.6	183.0	5.6	15.4%	6.2%
2003	85.0	57.7	105.4	0.9	18.6%	8.3%
2004	170.0	168.0	278.5	141.0	17.8%	10.1%
2005	260.0	239.5	374.7	6.2	13.7%	10.8%
2006	305.0	276.7	441.1	32.7	10.7%	1.9%
2007	355.0	344.3	472.9	28.3	8.8%	1.8%
2008	223.6	206.9	194.8	75.2	5.7%	(6.8%)
2010	45.0	45.2	46.9	10.1	5.3%	(8.3%)
2012	75.0	61.3	86.1	15.8	17.3%	2.0%
2013	200.0	182.6	118.1	134.3	12.8%	0.5%
2014	25.0	12.3	7.3	8.6	23.5%	11.7%
2015	170.0	125.1	33.9	128.9	15.3%	0.9%
2016	150.0	49.4	0.3	63.0	31.8%	15.3%
2018	146.5	12.1	0.8	13.4	NM	NM
<b>Total Special Situations</b>	<b>\$2,981.3</b>	<b>\$2,524.9</b>	<b>\$3,411.6</b>	<b>\$666.8</b>	<b>12.9%</b>	<b>5.5%</b>

PASERS Private Equity Vintage Year PME Comparison<sup>1,2</sup>

Strategy						Direct Alpha
Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR	PME <sup>3,4</sup>
Venture Capital						
1980	\$2.0	\$2.0	\$0.6	\$0.0	(10.3%)	(22.5%)
1985	33.0	33.0	58.0	-	8.6%	(5.6%)
1987	28.0	21.0	61.6	-	19.0%	5.0%
1988	15.2	15.2	27.5	-	9.5%	(4.0%)
1989	15.5	15.0	8.2	-	1.6%	(13.1%)
1990	18.3	18.2	42.3	-	22.4%	3.7%
1992	22.5	22.5	28.6	0.9	23.4%	4.2%
1993	95.0	95.1	93.5	-	35.4%	10.4%
1994	60.0	60.0	36.9	-	8.5%	(8.2%)
1995	18.0	18.0	13.4	-	22.4%	6.3%
1996	95.2	95.8	68.4	-	40.0%	21.6%
1997	195.7	195.3	103.8	0.1	11.4%	3.8%
1998	150.0	157.6	112.6	4.0	(1.6%)	(4.9%)
1999	235.8	234.4	112.7	4.6	(7.1%)	(10.1%)
2000	635.7	644.7	454.6	59.0	(1.7%)	(6.8%)
2001	289.2	286.2	233.9	53.0	2.6%	(4.2%)
2002	60.0	59.8	29.3	5.5	(4.5%)	(11.3%)
2003	100.0	98.8	87.9	11.0	3.8%	(3.9%)
2004	142.5	141.0	94.8	75.6	4.2%	(3.9%)
2005	278.0	291.8	320.6	124.8	8.6%	(1.3%)
2006	275.8	272.4	265.3	94.3	13.1%	3.8%
2007	227.8	220.0	248.2	100.3	10.6%	(0.6%)
2008	76.0	71.9	43.9	54.7	14.7%	0.1%
2010	45.0	42.4	9.7	48.7	6.1%	(6.3%)
2011	40.0	40.4	31.2	49.5	19.3%	4.8%
2013	50.0	52.3	18.6	75.0	15.6%	3.4%
2014	23.0	19.7	-	24.1	11.4%	(1.2%)
2015	75.0	63.4	7.0	86.6	20.5%	6.4%
2017	100.0	11.0	-	10.5	(10.8%)	0.0%
<b>Total Venture Capital</b>	<b>\$3,402.2</b>	<b>\$3,298.9</b>	<b>\$2,612.9</b>	<b>\$882.5</b>	<b>7.4%</b>	<b>(2.2%)</b>
<b>Total PE Portfolio</b>	<b>\$17,416.6</b>	<b>\$15,667.4</b>	<b>\$20,008.0</b>	<b>\$3,843.7</b>	<b>12.3%</b>	<b>3.6%</b>

PASERS Core Private Equity Strategy & Vintage Year PME Comparison<sup>1,2</sup>

Strategy	Commitment	Contributions	Distributions	Market Value	Net IRR	Direct Alpha PME <sup>3,4</sup>
Buyout						
1985	\$5.0	\$5.0	\$12.1	\$0.0	12.8%	(2.1%)
1988	12.5	12.5	14.9	-	11.7%	(6.1%)
1989	10.0	9.7	24.2	-	30.0%	13.3%
1990	5.0	5.1	11.6	-	13.8%	(2.0%)
1991	21.1	23.2	28.5	-	15.3%	(5.2%)
1993	160.0	180.6	450.1	-	37.3%	13.6%
1994	20.0	20.0	68.1	-	34.4%	14.5%
1995	145.0	131.4	182.3	-	42.2%	19.8%
1996	100.0	107.1	136.6	-	7.0%	3.8%
1997	564.9	563.7	908.3	0.1	12.7%	9.2%
1998	260.0	243.8	245.0	0.1	2.0%	0.3%
1999	692.2	671.1	1,058.3	3.1	10.7%	8.0%
2000	773.0	758.5	1,494.3	6.3	18.1%	12.8%
2001	115.0	108.0	254.4	8.7	27.0%	17.3%
2002	95.0	88.2	152.2	17.3	23.2%	15.9%
2003	261.0	270.2	448.4	21.1	14.6%	8.4%
2004	250.0	239.0	453.3	7.4	16.1%	12.7%
2005	240.1	233.0	437.1	19.5	18.1%	12.9%
2006	963.6	938.7	1,417.8	164.7	8.7%	0.6%
2007	409.5	391.5	501.0	156.6	10.7%	(1.4%)
2008	234.3	250.1	384.9	97.3	18.0%	4.1%
2010	65.0	55.5	62.5	17.9	9.4%	(3.8%)
2011	112.0	116.3	129.3	83.5	17.3%	3.0%
2012	298.0	242.5	116.6	224.7	11.4%	(1.4%)
2013	131.0	111.8	90.2	99.8	25.1%	10.9%
2014	312.4	249.5	92.3	255.8	15.7%	3.0%
2015	420.0	261.5	57.8	273.1	15.6%	1.6%
2016	393.4	221.0	30.1	240.7	15.2%	0.8%
2017	620.7	55.6	9.5	51.7	NM	NM
2018	150.0	7.3	(0.2)	7.6	NM	NM
<b>Total Buyout</b>	<b>\$7,839.8</b>	<b>\$6,571.5</b>	<b>\$9,271.6</b>	<b>\$1,757.0</b>	<b>2.9%</b>	<b>8.1%</b>

PASERS Core Private Equity Strategy & Vintage Year PME Comparison<sup>1,2</sup>

Strategy							
Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR	Direct Alpha PME <sup>3,4</sup>	
Special Situations							
1994		\$35.0	\$35.4	\$61.3	\$0.0	14.9%	(5.4%)
1995		24.0	24.0	39.3	-	10.6%	(2.4%)
1996		60.0	59.5	86.9	-	6.4%	3.5%
1997		40.0	40.0	60.4	-	8.6%	7.1%
1998		40.0	39.5	52.6	-	8.2%	7.2%
1999		70.0	69.5	123.3	0.3	13.2%	12.8%
2000		60.0	60.0	90.3	-	12.0%	20.3%
2001		252.6	244.1	417.2	2.2	19.9%	13.3%
2002		70.0	56.1	90.5	-	20.3%	8.5%
2003		50.0	35.4	56.0	-	28.5%	11.0%
2004		120.0	114.0	250.7	128.1	23.7%	15.6%
2005		240.0	219.5	352.3	6.2	14.6%	11.5%
2006		230.0	207.5	330.2	18.1	11.5%	2.9%
2007		205.0	198.1	284.0	11.1	11.9%	3.7%
2008		68.6	56.7	71.5	16.6	12.5%	0.6%
2010		45.0	45.2	46.9	10.1	5.3%	(8.3%)
2012		75.0	61.3	86.1	15.8	17.3%	2.0%
2013		200.0	182.6	118.1	134.3	12.8%	0.5%
2014		25.0	12.3	7.3	8.6	23.5%	11.7%
2015		170.0	125.1	33.9	128.9	15.3%	0.9%
2016		150.0	49.4	0.3	63.0	31.8%	15.3%
2018		146.5	12.1	0.8	13.4	NM	NM
Total Special Situations	\$2,376.8	\$1,947.4	\$2,659.8	\$556.8	14.0%	7.0%	

PASERS Core Private Equity Strategy & Vintage Year PME Comparison<sup>1,2</sup>

Strategy							
Vintage Year	Commitment	Contributions	Distributions	Market Value	Net IRR	Direct Alpha PME <sup>3,4</sup>	
Venture Capital							
1980	\$2.0	\$2.0	\$0.6	\$0.0	(10.3%)	(22.5%)	
1985	33.0	33.0	58.0	-	8.6%	(5.6%)	
1987	28.0	21.0	61.6	-	19.0%	5.0%	
1988	15.2	15.2	27.5	-	9.5%	(4.0%)	
1989	15.5	15.0	8.2	-	1.6%	(13.1%)	
1990	18.3	18.2	42.3	-	22.4%	3.7%	
1992	15.0	15.0	16.3	-	14.2%	(1.0%)	
1993	95.0	95.1	93.5	-	35.4%	10.4%	
1994	60.0	60.0	36.9	-	8.5%	(8.2%)	
1995	18.0	18.0	13.4	-	22.4%	6.3%	
1996	95.2	95.8	68.4	-	40.0%	21.6%	
1997	150.7	150.3	83.6	-	12.3%	3.9%	
1998	25.0	25.0	18.2	-	(0.8%)	(0.2%)	
1999	131.0	129.2	31.0	2.1	(11.7%)	(15.1%)	
2000	160.3	158.8	97.9	12.9	(1.0%)	(4.8%)	
2003	25.0	25.0	30.3	7.1	15.4%	8.1%	
2005	18.0	18.0	37.9	6.4	14.7%	5.3%	
2006	70.0	70.6	98.8	14.6	29.2%	21.9%	
2007	80.0	80.2	121.5	43.4	17.0%	4.8%	
2008	24.0	21.4	23.0	23.0	26.2%	10.2%	
2010	25.0	23.3	9.7	34.0	12.9%	(0.6%)	
2011	40.0	40.4	31.2	49.5	19.3%	4.8%	
2013	50.0	52.3	18.6	75.0	15.6%	3.4%	
2014	23.0	19.7	-	24.1	11.4%	(1.2%)	
2015	65.0	55.8	5.8	80.3	24.3%	9.7%	
2017	100.0	11.0	-	10.5	NM	NM	
<b>Total Venture Capital</b>	<b>\$1,382.2</b>	<b>\$1,269.2</b>	<b>\$1,034.0</b>	<b>\$382.8</b>	<b>14.2%</b>	<b>0.8%</b>	
<b>Total Core PE Portfolio</b>	<b>\$11,598.7</b>	<b>\$9,788.2</b>	<b>\$12,965.4</b>	<b>\$2,696.7</b>	<b>15.3%</b>	<b>5.4%</b>	