



## Annual Board Update

For the period ending December 31, 2017

Report Prepared For:



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## I. Overview

StepStone Group LP (“StepStone”) was engaged by Pennsylvania State Employees’ Retirement System (“SERS”) to provide Private Equity Advisory services for prospective investment opportunities as well as portfolio monitoring and reporting. StepStone monitors new and existing private equity investments for SERS at both the fund level and underlying portfolio company level to provide detailed performance and exposure analysis. The following report represents SERS’ portfolio of Private Investments (the “Portfolio”).

Since inception through December 31, 2017, SERS has committed US\$17.1 billion to 456 partnerships, of which 330 are active. This quarterly monitoring report covers the performance of the Portfolio as of December 31, 2017, as well as significant activity that occurred during the fourth quarter of 2017. Natural Resource partnerships are included in Buyout as of July 1, 2016.

### Portfolio Performance Assessment

As of December 31, 2017, the Portfolio managed by SERS consisted of the following (all amounts herein US\$ millions unless otherwise noted):

US\$ in millions	Inception to Date December 31, 2017	Inception to Date September 30, 2017	Inception to Date December 31, 2016	Quarterly Change	Annual Change
<b>Active Portfolio</b>					
Number of Active Managers	151	153	151	(2)	0
Number of Active Investments	330	348	345	(18)	(15)
<b>Total Portfolio</b>					
Number of Managers	177	177	174	-	3
Number of Investments	456	456	448	-	8
Committed Capital	\$17,124.6	\$17,124.6	\$16,487.5	\$0.0	\$637.1
Contributed Capital <sup>1</sup>	15,442.6	15,281.0	14,874.0	161.5	568.6
Distributed Capital <sup>2</sup>	20,644.0	20,327.7	19,399.8	316.3	1,244.2
Market Value	4,023.5	4,064.7	4,114.8	(41.3)	(91.3)
Total Value	24,667.5	24,392.5	23,514.6	275.0	1,152.9
<b>Total Gain/(Loss)</b>	<b>9,224.9</b>	<b>9,111.4</b>	<b>8,640.6</b>	<b>113.5</b>	<b>584.4</b>
Unfunded Commitment	2,033.2	2,190.4	1,835.2	(157.2)	197.9
Total Exposure <sup>3</sup>	6,056.6	6,255.1	5,950.0	(198.5)	106.6
DPI <sup>4</sup>	1.3x	1.3x	1.3x	0.01x	0.03x
TVM <sup>5</sup>	1.6x	1.6x	1.6x	0.00x	0.02x
IRR <sup>6</sup>	12.3%	12.3%	12.2%	(bps)	5 bps

<sup>1</sup> Contributed Capital includes contributions for investments, management fees and expenses to underlying partnership investments.

<sup>2</sup> Includes stock distributions.

<sup>3</sup> Total Exposure represents the sum of Market Value and Unfunded Commitment.

<sup>4</sup> DPI, or Distributed to Paid-In Multiple, is a performance metric that measures distributions received relative to capital invested. DPI is calculated as Distributed Capital divided by Contributed Capital.

<sup>5</sup> TVM, or Total Value Multiple, is a performance metric that measures total value created by the Portfolio relative to capital invested, without consideration for time. TVM is calculated as Total Value, which is comprised of Market Value plus Distributed Capital, divided by Contributed Capital. TVM net of StepStone’s fees is 1.6x.

<sup>6</sup> IRR, or Internal Rate of Return, is a performance metric that is calculated based on the Portfolio’s daily cash flows and market value as of quarter-end. IRR is net of manager’s fees, expenses and carried interest. IRR net of StepStone’s fees is 12.26% as of December 31, 2017.

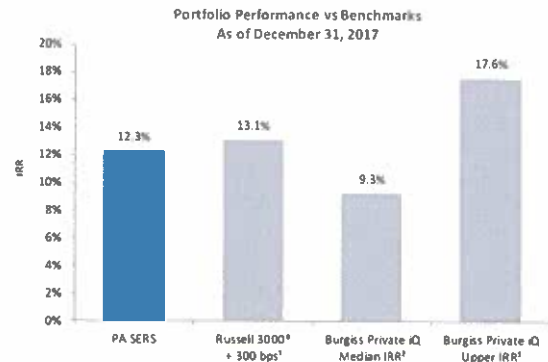
**Note:** Portfolio excludes T. Rowe Price Stock Distribution Account. Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

## Portfolio Performance vs. Benchmarks

The Portfolio's performance is measured against two benchmarks, the Russell 3000<sup>®</sup> and Burgiss Private iQ.

The following graph illustrates Portfolio IRR performance versus benchmarks as of December 31, 2017.

StepStone believes the Russell 3000<sup>®</sup> Index plus 300 bps from inception appropriately reflects the opportunity cost of investing in Buyout, Venture, and Special Situations investments versus publicly traded common stocks and therefore is an appropriate benchmark for SERS.



SERS' returns include Buyout, Venture Capital and Special Situations investments from vintage years 1980 to 2017.

SERS' Buyout, Venture Capital, and Special Situations investments have a since inception IRR of 14.4%, 7.3%, and 12.9% respectively.

As of December 31, 2017	1 Year Return	3 Year Return	5 Year Return	10 Year Return
<b>SERS Combined Portfolio (IRR)</b>	<b>15.5%</b>	<b>8.4%</b>	<b>11.5%</b>	<b>6.9%</b>
Burgiss Private iQ Pooled PE Benchmark <sup>4</sup>	17.7%	11.4%	13.3%	9.0%
Burgiss Private iQ All PE Top-Quartile <sup>5</sup>	21.9%	17.6%	19.7%	15.4%
Russell 3000 <sup>®1</sup>	21.1%	11.1%	15.6%	8.6%
Russell 3000 <sup>®</sup> + 300 bps	24.1%	14.1%	18.6%	11.6%
<b>SERS Buyout (IRR)</b>	<b>17.5%</b>	<b>11.0%</b>	<b>12.7%</b>	<b>7.4%</b>
Burgiss Private iQ Pooled Buyout Benchmark <sup>4</sup>	20.6%	12.9%	13.5%	8.8%
Burgiss Private iQ Buyout Top-Quartile <sup>5</sup>	26.1%	21.6%	22.0%	17.1%
<b>SERS Venture Capital (IRR)</b>	<b>8.8%</b>	<b>3.9%</b>	<b>10.4%</b>	<b>5.4%</b>
Burgiss Private iQ Pooled VC Benchmark <sup>4</sup>	14.4%	9.6%	16.3%	9.8%
Burgiss Private iQ VC Top-Quartile <sup>5</sup>	20.3%	15.3%	19.7%	14.6%
<b>SERS Special Situations (IRR)</b>	<b>18.2%</b>	<b>5.4%</b>	<b>8.5%</b>	<b>6.9%</b>
Burgiss Private iQ Pooled SS Benchmark <sup>4</sup>	11.2%	7.7%	9.0%	7.8%
Burgiss Private iQ SS Top-Quartile <sup>5</sup>	14.2%	13.0%	13.8%	12.1%

<sup>1</sup>Benchmark is a dollar-weighted calculation of quarterly changes in the Russell 3000<sup>®</sup> Index. Russell Investment Group is the source and owner of the trademark, service marks and copyrights related to the Russell Indexes. Russell<sup>®</sup> is a trademark of Russell Investment Group. Returns shown are time-weighted (TWR).

<sup>2</sup>Benchmark is provided by Burgiss Private iQ and reflects Global Private Equity Funds (excluding Real Assets and Real Estate) Median IRR as of December 31, 2017 for funds with vintage years 1980 to 2017. Returns shown are dollar-weighted (IRR).

<sup>3</sup>Benchmark is provided by Burgiss Private iQ and reflects Global Private Equity Funds (excluding Real Assets and Real Estate) Upper Quartile IRR as of September 30, 2017 for funds with vintage years 1980 to 2017. Returns shown are dollar-weighted (IRR).

<sup>4</sup>Benchmark is provided by Burgiss Private iQ and reflects Global pooled returns for Buyout (including Natural Resources), Venture Capital, Special Situations (including Distressed and Mezzanine), and all Private Equity (excluding Real Assets and Real Estate), respectively, as of December 31, 2017 for funds with vintage years 1980 to 2017. Returns shown are dollar-weighted (IRR).

<sup>5</sup>Benchmark is provided by Burgiss Private iQ and reflects Global Upper Quartile IRR for Buyout (including Natural Resources), Venture Capital, Special Situations (including Distressed and Mezzanine), and all Private Equity (excluding Real Assets and Real Estate), respectively, as of December 31, 2017 for funds with vintage years 1980 to 2017. Returns shown are dollar-weighted (IRR).

**Note:** Burgiss Private iQ data is continuously updated and is therefore subject to change. The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

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

## II. Market Overview

### Executive Summary

Global equity markets finished 2017 with strong gains in the fourth quarter. The MSCI Asia index led benchmark performances, gaining 8.1% for the quarter, followed by the MSCI Emerging Markets index which was up 7.1%. US equities advanced at the fastest pace in two years, with the S&P 500 Total Return index gaining 6.6% for the quarter, led by the Consumer Discretionary sector (up 9.7%). The US and Japan were propelled higher by political events, as investors in the US welcomed business-friendly corporate tax reform expected to stimulate growth and inflation, as Japanese incumbent Prime Minister Shinzo Abe won the October general election signifying a stable sentiment around monetary and fiscal policies. Emerging markets rose for the fourth consecutive quarter, carried by technology companies and strengthening prices for key commodities, leading major indices for the year. Global bond markets saw corporate bonds outperform government bonds and investment grade outperform high yield, aside from high yield credit in Europe. The US Federal Reserve raised interest rates at the December meeting, targeting 1.25% to 1.50%, which marked the third rate hike of the year. The US Treasury Bond and German Bund yields continued to flatten during the quarter.<sup>1</sup>

In private markets, US leveraged buyout (“LBO”) debt volume decreased, down 58.7% quarter-over-quarter to US\$17.1 billion, 29.8% lower than the fourth quarter of 2016 and 5.2% below the 10-year quarterly average of US\$16.2 billion. According to data from S&P, purchase price multiples (“PPM”) for US LBOs decreased to 9.9x EBITDA in the fourth quarter, down 11.6% from 11.2x EBITDA in the prior quarter, and above the 10-year average of 9.2x EBITDA. Given S&P’s small sample size of 15 deals in Q4 2017, StepStone referenced its proprietary deal database. In the fourth quarter, StepStone’s deal database currently includes 24 closed deals with an average PPM of 11.6x, more in line with StepStone’s observations. Average debt multiples of large corporate US LBO loans decreased to 5.5x for the quarter, above the 10-year average of 5.4x. Equity contributions for US LBOs increased slightly to 45.9%, a 6.1% increase quarter-over-quarter, and above the 10-year average of 42.3%.<sup>2</sup>

Global private equity fundraising totaled US\$72.7 billion in the fourth quarter, representing a decline of 7.8% quarter-over-quarter and a decrease of 19.6% compared to the fourth quarter of 2016. Geographically, the US represented 78.2% of total funds raised in the quarter, higher than the 10-year average of 60.1%. Funds raised in Europe, Asia and the Rest of World made up 11.8%, 6.1% and 3.9%, respectively, of global fundraising for the quarter. Invested capital for private equity funds decreased 36.6% quarter-over-quarter, with \$54.0 billion invested in 2,897 deals. A significant portion of the capital deployed was in the Information Technology sector, accounting for 49.6% compared to the 10-year average of 32.7%.<sup>3</sup>

Private equity-backed IPO transaction volume increased in the fourth quarter with US\$6.1 billion raised in 31 IPOs. The amount raised through IPOs increased 58.4% compared to the fourth quarter of 2016. The largest IPO of the quarter was completed by Sea Ltd. (NYSE: SE), a provider of online personal computer and mobile digital content, e-commerce, and payment platforms based in Singapore, which raised US\$989.3 million, representing 16.1% of the total value for all IPOs in the quarter. M&A activity increased in the fourth quarter with a total value of US\$198.0 billion, a 52.0% increase compared to the prior quarter and a 29.5% decrease compared to the fourth quarter of 2016. The largest M&A deals of the quarter were the US\$25.8 billion purchase of C. R. Bard, Inc. by Becton, Dickinson and Company (NYSE: BDX) and the US\$13.8 billion purchase of Logisor Europe Ltd. by China Investment Corporation. Together these deals represent 20.0% of the total value for all deals in the quarter.<sup>4</sup>

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<sup>1</sup> Capital Group, World Markets Review – Fourth Quarter 2017

<sup>2</sup> S&P US LBO Review, Q4 2017

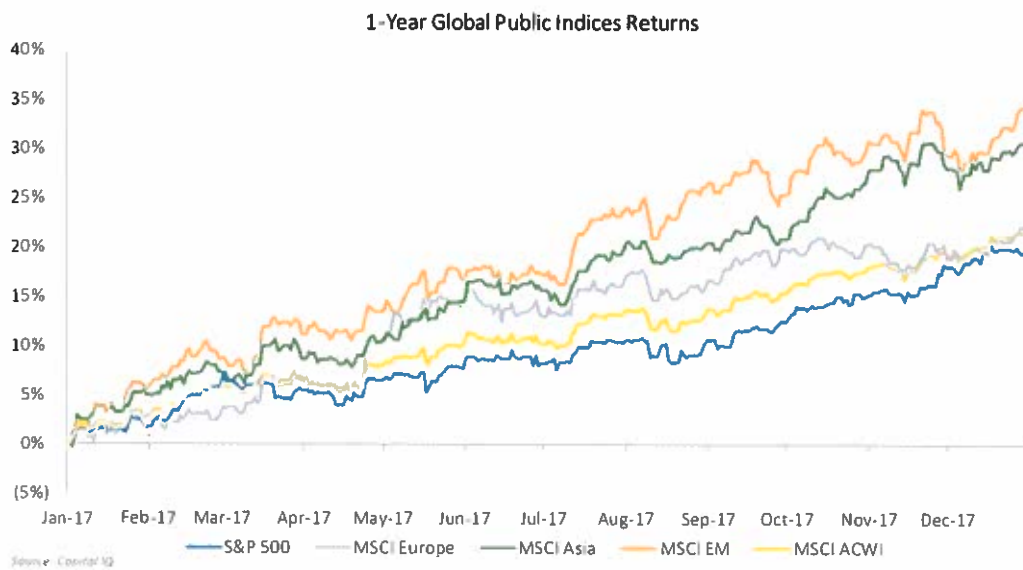
<sup>3</sup> Thomson ONE data as of March 23, 2018. Please note, all data in this report from Thomson ONE is subject to revision as further data is made available

<sup>4</sup> Capital IQ Transaction Screening Report as of March 27, 2018

## Capital Markets Overview

### Public Equity Markets

Public markets continued to rise during the fourth quarter of 2017, as US equities were led higher by the Consumer Discretionary sector. The S&P 500 Total Return index outperformed the MSCI Europe index during the quarter, increasing 6.6%. However, the MSCI Asia index was the top performing index, outperforming the Emerging Markets, US, and European indices, increasing 8.1% for the quarter. The MSCI Emerging Markets index followed, up 7.1% for the quarter. The MSCI Europe index increased 1.9% for the quarter.



The following table shows the returns of four major MSCI indices, as well as the S&P 500 and the S&P 500 Total Return Index, over various time horizons through December 31, 2017. Returns for time periods greater than one year are annualized. During 2017, MSCI Emerging Markets increased 34.3%, followed by MSCI Asia at 30.8%, MSCI Europe at 22.1%, and US markets at 21.8%.

### Regional Indices

	3 Mo	1 Yr	3 Yr	5 Yr	10 Yr
MSCI Asia	8.1%	30.8%	9.0%	7.2%	1.3%
MSCI Europe	1.9%	22.1%	3.8%	4.4%	(1.6%)
MSCI EM	7.1%	34.3%	6.6%	1.9%	(0.7%)
MSCI ACWI	5.4%	21.6%	7.1%	8.6%	2.4%
S&P 500	6.1%	19.4%	9.1%	13.4%	6.2%
S&P 500 Total Return*	6.6%	21.8%	11.4%	15.8%	8.5%

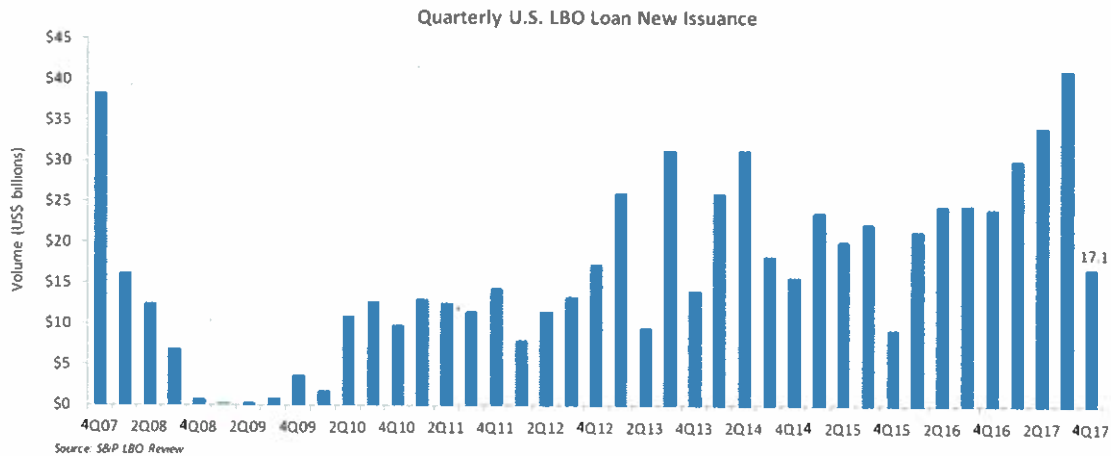
For the period ended December 31, 2017

\*Includes reinvestment of dividends

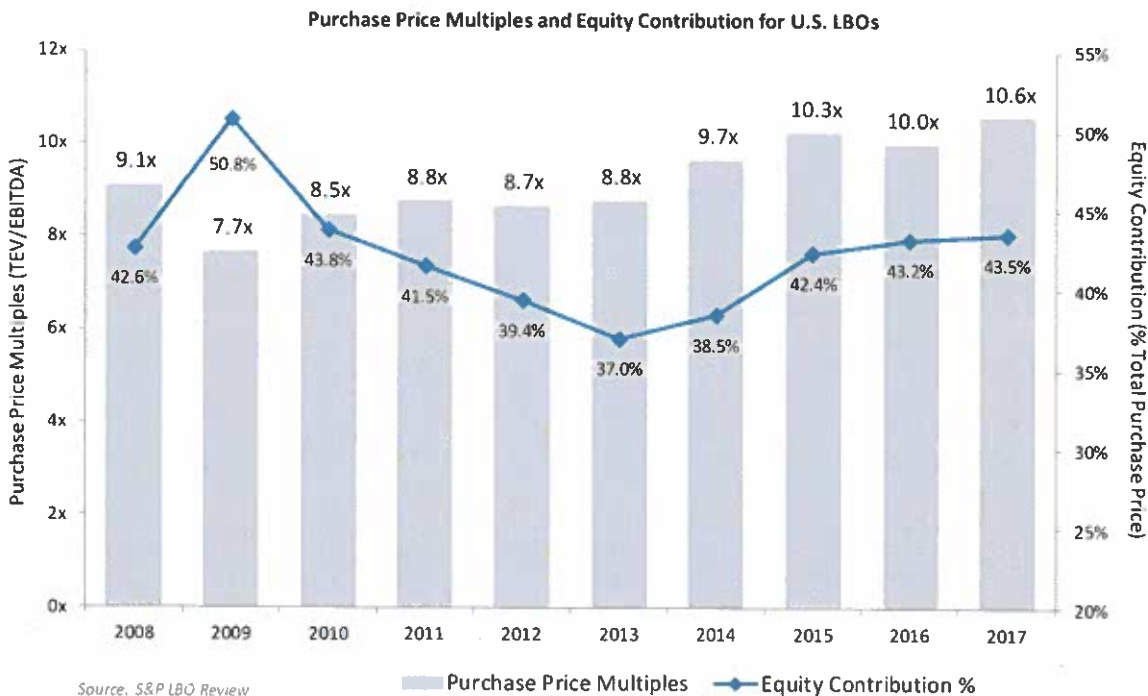
Source: Capital IQ

## Debt Markets

During the fourth quarter of 2017, US LBO new loan issuance totaled US\$17.1 billion, representing a decrease of 58.7% from the prior quarter and a decrease of 29.8% from the fourth quarter of 2016. The following chart shows the quarterly volume of US LBO new loan issuance for the past ten years.



The weighted average purchase price multiple for US LBO deals was 10.6x total enterprise value (“TEV”) to EBITDA in 2017, an increase from 10.0x in the prior year and above the 10-year average of 9.2x. Average debt multiples of large corporate US LBO loans increased year-over-year from 5.3x EBITDA to 5.7x EBITDA, as equity contributions for US LBOs increased slightly from 43.2% in 2016 to 43.5% in 2017. The following chart compares purchase price multiples and equity contribution percentages for US LBO deals for the past ten years.





## Private Equity Market Overview

### All Private Equity

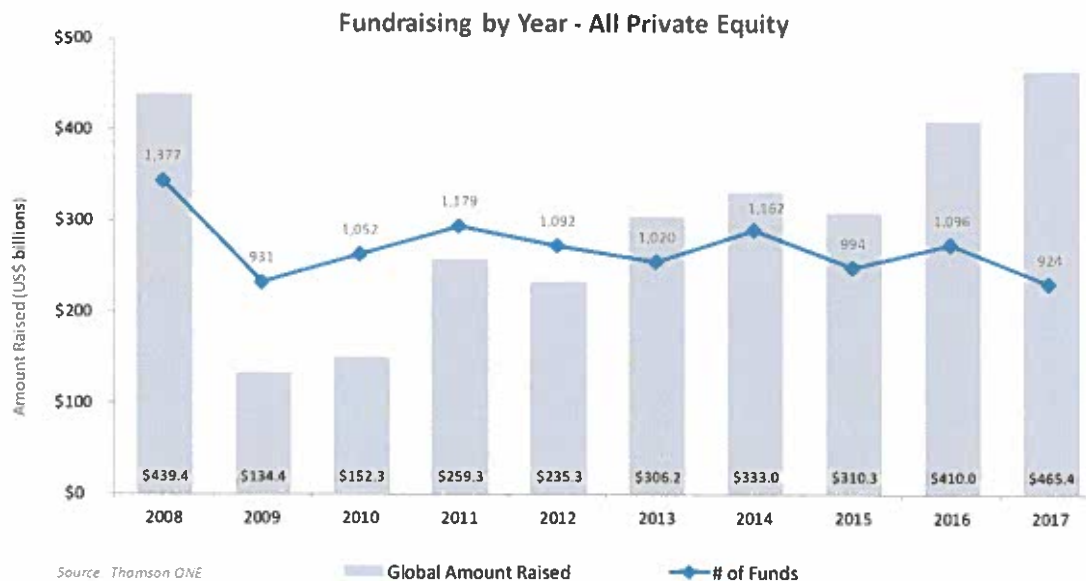
The table below shows the pooled Internal Rate of Return (“IRR”) performance of global private equity investments by sector over various investment horizons through December 31, 2017. The All Private Equity benchmark had an IRR of 4.4% for the quarter. All sectors had positive quarterly IRRs, led by Large Buyouts with the best IRR for the quarter (+5.2%), followed by Small/Middle Buyouts (+5.0%) and Venture Capital (+4.4%).

Sector	3 Mo	1 Yr	3 Yr	5 Yr	10 Yr
Small/Middle Buyouts (<\$3bn)	5.0%	20.1%	12.5%	12.5%	8.6%
Large Buyouts (>\$3bn)	5.2%	23.5%	14.7%	15.6%	9.3%
Mezzanine	2.2%	10.6%	8.4%	9.7%	7.3%
Energy	2.9%	3.9%	1.6%	2.5%	5.5%
Venture Capital	4.4%	14.5%	10.0%	16.5%	10.4%
<b>All Private Equity</b>	<b>4.4%</b>	<b>18.0%</b>	<b>11.6%</b>	<b>13.5%</b>	<b>9.0%</b>

Source: Burgiss PrivateIQ

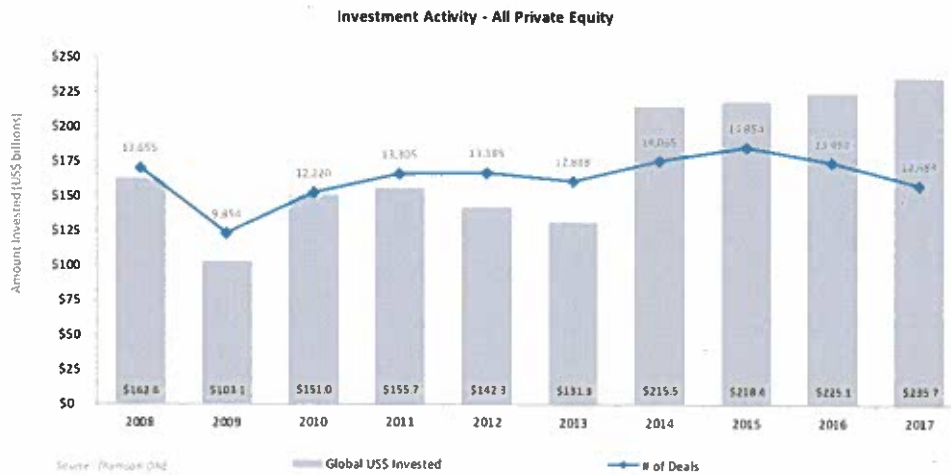
### Fundraising

Fundraising for global private equity totaled US\$72.7 billion in the fourth quarter of 2017, a 7.8% decrease compared to the prior quarter and a 19.6% decrease from the fourth quarter of 2016. Buyout fundraising totaled US\$44.5 billion, decreasing 32.6% quarter-over-quarter and 16.1% compared to the fourth quarter of 2016. Venture Capital raised US\$10.9 billion in the fourth quarter, an increase of 75.9% compared to the prior quarter and a decrease of 30.3% compared to the fourth quarter of 2016. The chart below shows annual private equity fundraising activity across all sectors over the past ten years.

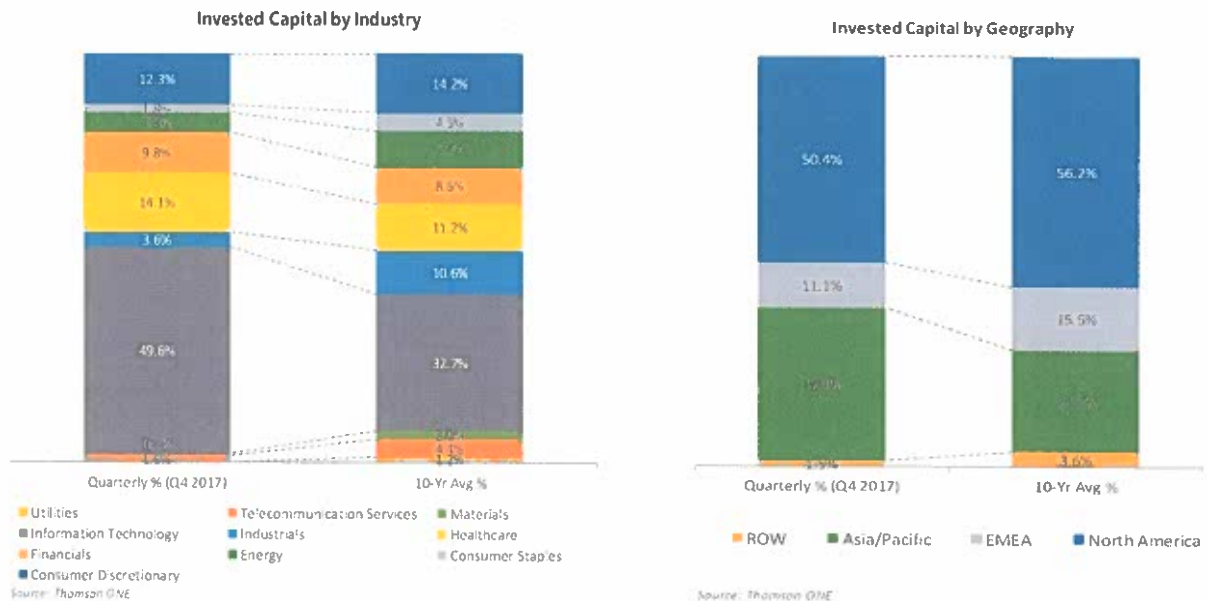


### Investment Activity

Private equity funds invested US\$54.0 billion globally during the fourth quarter, representing a quarter-over-quarter decrease of 36.6% and a 47.3% increase from the fourth quarter of 2016. The average investment size during the quarter was US\$18.6 million, a decrease of 32.6% compared to the average investment size of US\$27.6 million in the third quarter.

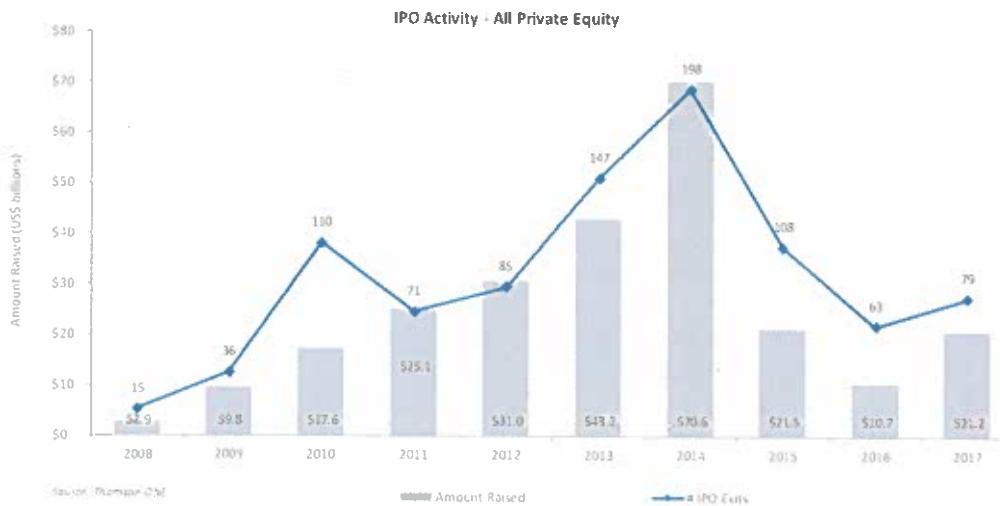


The graphs below depict the percentage of invested capital by industry and geography for the fourth quarter of 2017 and over the last ten years. The Information Technology sector attracted the most capital, accounting for US\$26.8 billion of transactions, or 49.6% of total capital invested by private equity firms, compared to its 10-year average of 32.7%. Considering geography, in the fourth quarter of 2017, investment activity was concentrated in North America, similar to 10-year historical averages.

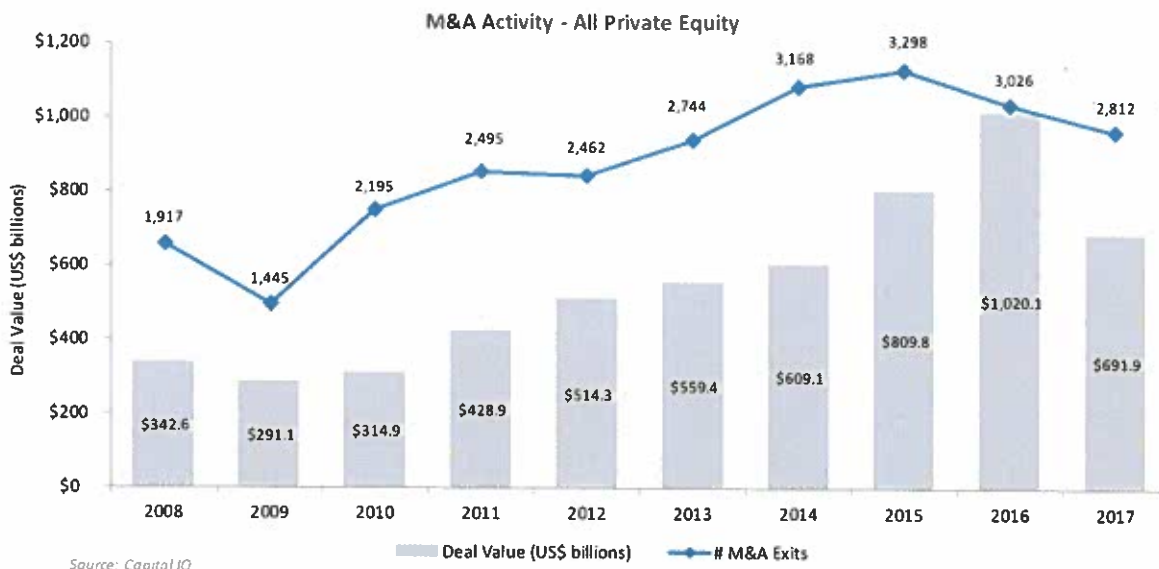


## Deal Environment

In the fourth quarter, the number of private equity-backed IPOs increased from 12 to 31, and the amount raised increased from US\$2.0 billion to US\$6.1 billion compared to the prior quarter. The fourth quarter IPOs were comprised of 23 venture capital-backed IPOs that raised a total of US\$4.3 billion and eight IPOs from buyouts that raised US\$1.8 billion. The largest IPO of the quarter was completed by Sea Ltd. (NYSE: SE), a provider of online personal computer and mobile digital content, e-commerce, and payment platforms based in Singapore, which raised US\$989.3 million, representing 16.1% of the total value for all IPOs in the quarter. The graph below shows the amount raised and the number of IPOs on the NYSE and NASDAQ over the past ten years.



The number of private equity-backed Mergers and Acquisitions (“M&A”) decreased 3.3%, but the total value of M&A deals increased 52.0% compared to the prior quarter. In the fourth quarter, there were 708 private-equity backed M&A deals totaling US\$198.0 billion. The largest M&A deals of the quarter were the US\$25.8 billion purchase of C. R. Bard, Inc. by Becton, Dickinson and Company (NYSE: BDX) and the US\$13.8 billion purchase of Logisor Europe Ltd. by China Investment Corporation. Together these deals represent 20.0% of the total value for all deals in the quarter. The graph below shows the deal value and the number of M&A deals over the past ten years.



### III. SERS Portfolio Review

#### Summary

During the fourth quarter of 2017, SERS made total contributions of US\$161.5 million (including US\$13.1 million in fees) and received US\$316.3 million in distributions, for a net cash inflow of US\$154.8 million during the period. With US\$4.0 billion in market value and US\$2.0 billion in unfunded commitments as of December 31, 2017, SERS' total exposure to private equity is approximately US\$6.1 billion.

#### New Investment Commitments

The Portfolio made no new commitments for the period, October 1, 2017 through December 31, 2017.

#### Subsequent Investment Commitments

The Portfolio made three new commitments for the period, January 1, 2018 through March 31, 2018.

##### New Investment Commitments Q1 2018

Fund	Closing Date	Sector	Geographic Focus	Commitments (mm)
Clearlake Capital Partners V, LP	1/18/2018	Buyout	North America	\$55.0
LLR Equity Partners V	3/12/2018	Buyout	North America	\$75.0
Providence Strategic Growth III	3/9/2018	Buyout	North America	\$75.0
<b>Total</b>				<b>\$205.0</b>

#### Quarterly Performance

The following table details the quarterly change in value by contributions, distributions, and unrealized gains and losses which occurred during the past eight quarters, net of any partnership fees and expenses.

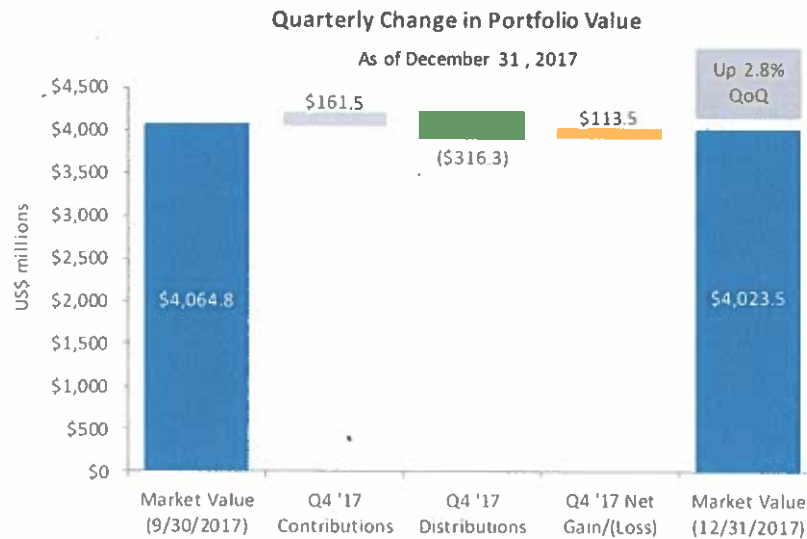
	2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Beginning Market Value	\$4,755.0	\$4,604.0	\$4,464.5	\$4,347.2	\$4,114.8	\$4,121.9	\$4,039.8	\$4,064.7
Contributed Capital	92.8	70.3	68.6	170.6	113.8	107.4	185.8	161.5
Distributed Capital	(233.3)	(297.9)	(328.5)	(428.4)	(294.8)	(343.3)	(289.9)	(316.3)
Appreciation/(Depreciation) <sup>1</sup>	(10.4)	88.0	142.7	25.3	188.2	153.7	129.0	113.5
Ending Market Value	4,604.0	4,464.5	4,347.2	4,114.8	4,121.9	4,039.8	4,064.7	4,023.5
Unfunded Commitment	1,499.8	1,492.7	1,574.0	1,835.2	1,857.7	2,116.7	2,190.4	2,033.2
<b>Total Exposure</b>	<b>\$6,103.8</b>	<b>\$5,957.2</b>	<b>\$5,921.2</b>	<b>\$5,950.0</b>	<b>\$5,979.6</b>	<b>\$6,156.5</b>	<b>\$6,255.1</b>	<b>\$6,056.6</b>
Since Inception IRR	12.6%	12.3%	12.3%	12.2%	12.2%	12.3%	12.3%	12.3%

<sup>1</sup>Appreciation/ (Depreciation) represents realized and unrealized gains/(losses) during the quarter, which is comprised of the difference between Ending Market Value and Beginning Market Value plus Contributed Capital minus Distributed Capital.

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

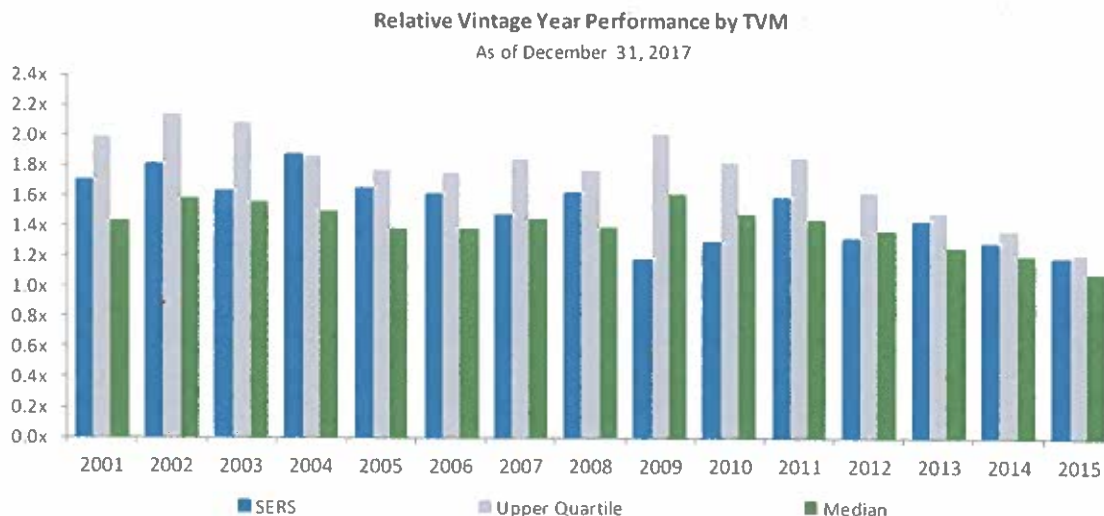
### Valuation Movement

The valuation of the Portfolio increased by approximately US\$113.5 million, or 2.8% (on a net, after-fees basis) during the fourth quarter, primarily driven by Buyout-focused partnership investments.



### Performance by Vintage Year

The following graph illustrates Portfolio investment performance by vintage year as of December 31, 2017 relative to the upper quartile and median Global Private Equity TVM benchmarks as provided by Burgiss Private IQ. Performance of funds that are less than two years old is not meaningful. In aggregate, 12 out of 15 vintage years shown have outperformed the median and one has outperformed the upper quartile.



**Note:** Vintage years prior to 2001 have a market value of US\$111.1 million, representing 2.8% of the Portfolio's total market value as of December 31, 2017. Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

The following graph illustrates Portfolio investment performance by vintage year as of December 31, 2017 relative to the upper quartile and median Global Private Equity IRR benchmarks as provided by Burgiss Private iQ. In aggregate, 11 out of 15 vintage years shown have outperformed the median and none of 15 have outperformed the upper quartile.



## Diversification

### By Strategy/Sub-Strategy

(US\$ in millions)

As of December 31, 2017	Market Value		Unfunded		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
[Redacted Data]						
<b>Total</b>	<b>4,023.5</b>	<b>100.0%</b>	<b>2,033.2</b>	<b>100.0%</b>	<b>6,056.6</b>	<b>100.0%</b>

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

## Fund Geographic Focus

(US\$ in millions)

As of December 31, 2017	Market Value		Unfunded		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
North America	2,658.9	66.1%	1,036.7	51.0%	3,695.6	61.0%
Europe	381.6	9.5%	284.6	14.0%	666.2	11.0%
Global	489.4	12.2%	383.7	18.9%	873.1	14.4%
Asia	349.1	8.7%	182.2	9.0%	531.2	8.8%
Emerging Markets	144.5	3.6%	146.1	7.2%	290.5	4.8%
<b>Total</b>	<b>4,023.5</b>	<b>100.0%</b>	<b>2,033.2</b>	<b>100.0%</b>	<b>6,056.6</b>	<b>100.0%</b>

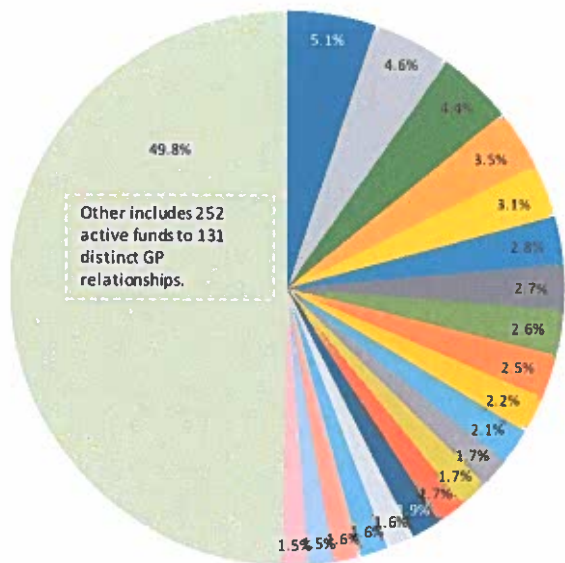
## By Investment Manager

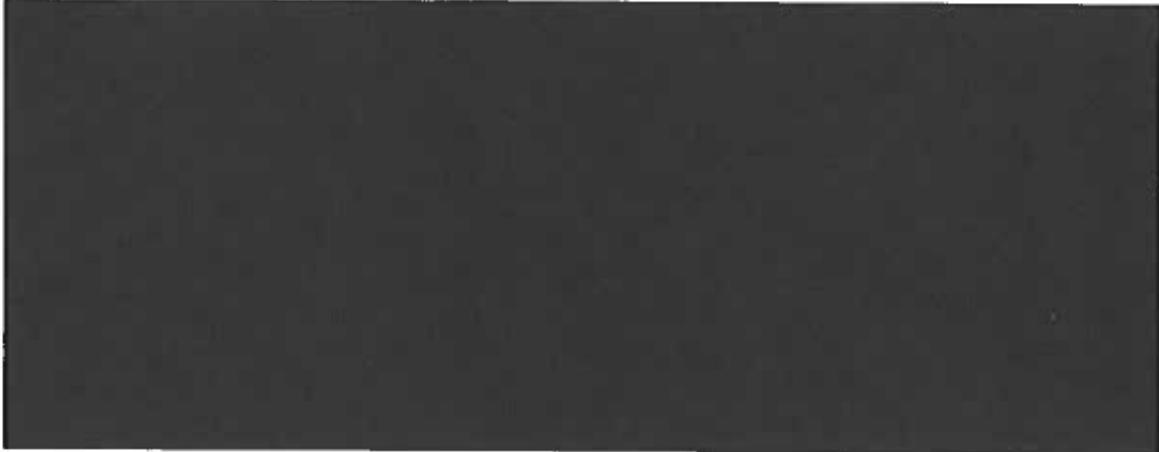
As of December 31, 2017, the Portfolio was highly diversified by investment manager, with the top 20 managers (listed with number of funds) comprising US\$3.0 billion, or 49.8% of total exposure. The remaining 131 active managers comprised 50.6% of total exposure as of quarter-end.

Asia Alternatives Capital Partners makes up the largest exposure by manager (US\$310.3 million total exposure), or 5.1% of total exposure.

Total Exposure by Manager (\$6,056.6M)

As of December 31, 2017



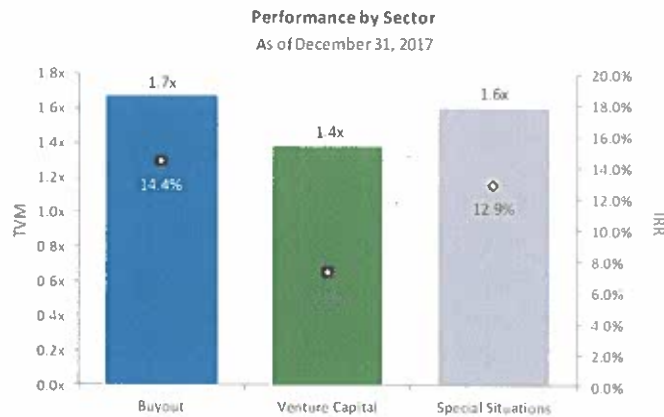


### Portfolio Periodic Returns vs. Russell 3000® Index

As of December 31, 2017	1 Year	3 Year	5 Year	10 Year	Since Inception
PA SERS IRR	15.5%	8.4%	11.5%	6.9%	12.3%
Russell 3000® <sup>1</sup>	21.1%	11.1%	15.6%	8.6%	10.1%
Russell 3000® + 300 bps <sup>1</sup>	24.1%	14.1%	18.6%	11.6%	13.1%
<b>PA SERS Outperformance/(Underperformance)</b>					
vs. Russell 3000® <sup>1</sup>	(5.6%)	(2.8%)	(4.0%)	(1.7%)	2.2%
vs. Russell 3000® + 300 bps <sup>1</sup>	(8.6%)	(5.8%)	(7.0%)	(4.7%)	(0.8%)

### Performance by Strategy

Buyout is the best performing sector generating an IRR of 14.4% and a TVM of 1.7x as of December 31, 2017.



<sup>1</sup>Benchmark is a dollar-weighted calculation of quarterly changes in the Russell 3000® Index. Russell Investment Group is the source and owner of the trademark, service marks and copyrights related to the Russell Indexes. Russell® is a trademark of Russell Investment Group. Returns shown are time-weighted (TWR).

Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses. The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.



## Portfolio Cash Flow Analysis

During the fourth quarter of 2017, the Portfolio made US\$316.3 million of contributions and received US\$161.5 million of distributions, for a net cash inflow of US\$154.8 million. The portfolio has been cash flow positive for 32 consecutive quarters. The graphs below illustrate recent cash flow activity by quarter and year.

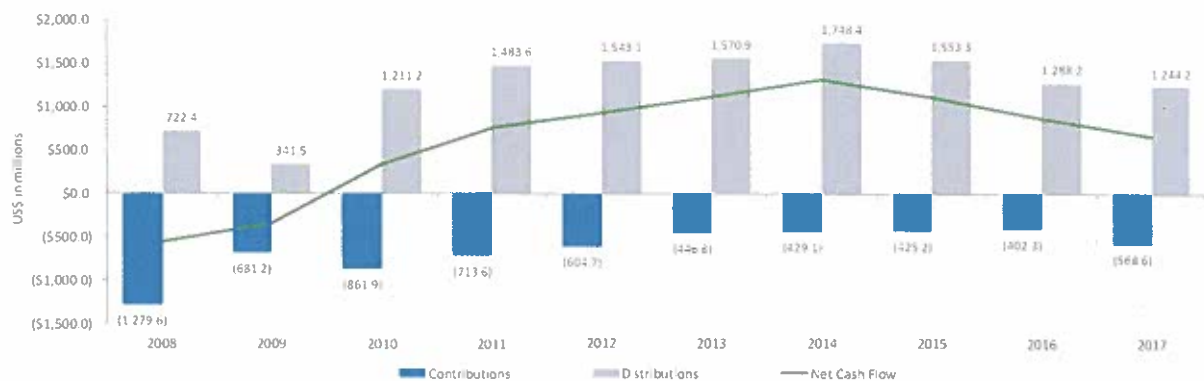
### Quarterly Cash Flow Activity



US\$ millions

Quarterly Net Cash Flows											
Q1 '15	Q2 '15	Q3 '15	Q4 '15	Q1 '16	Q2 '16	Q3 '16	Q4 '16	Q1 '17	Q2 '17	Q3 '17	Q4 '17
239.1	293.9	329.5	265.5	140.6	227.6	259.9	257.8	181.0	235.8	104.0	154.8

### Yearly Cash Flow Activity

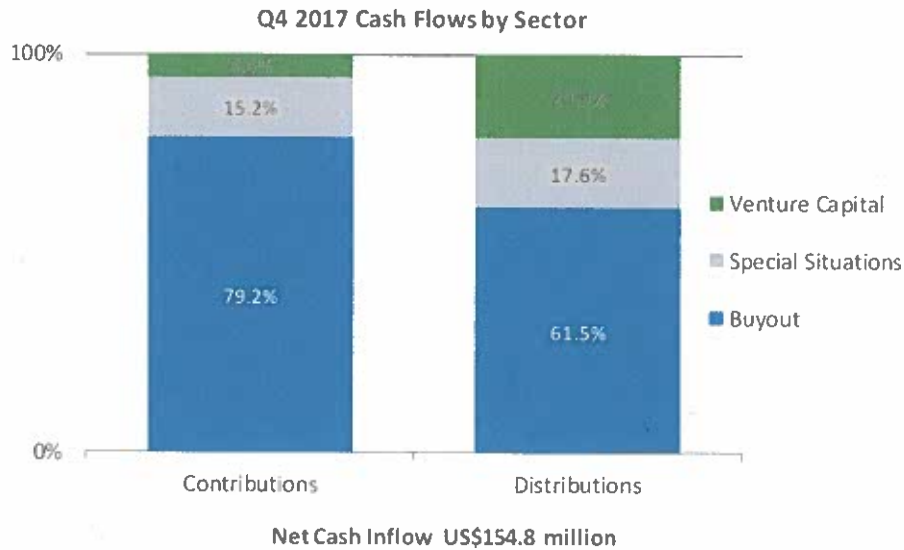


US\$ millions

Annual Net Cash Flows									
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(557.2)	(339.7)	349.3	770.0	938.3	1,124.1	1,319.3	1,128.1	885.8	675.7

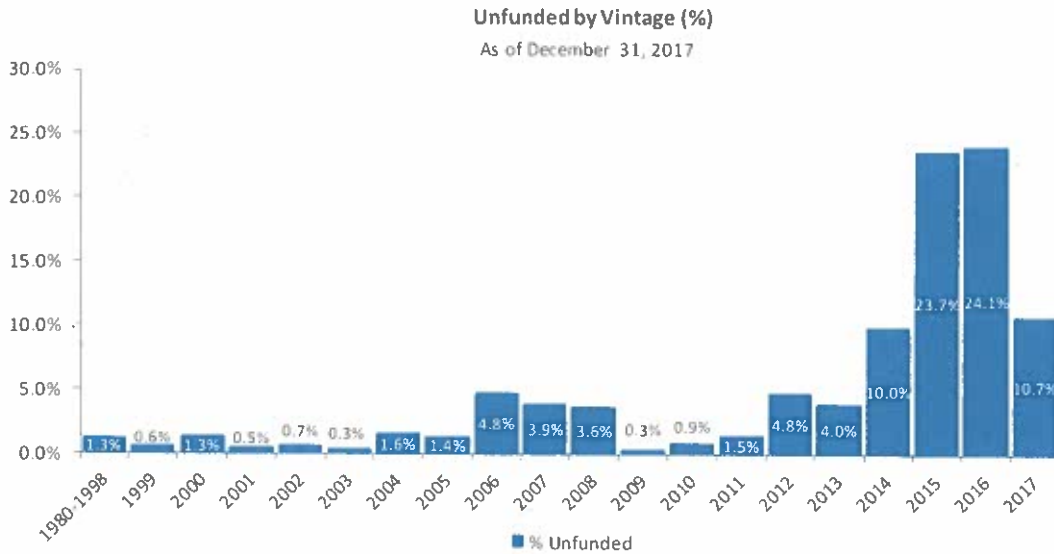
### Cash Flow by Sector

Buyout funds were the most active in terms of cash flow activity during the fourth quarter of 2017, drawing down US\$127.9 million, or 79.2% of total contributions during the quarter, and distributing US\$194.5 million, or 61.5% of total distributions during the quarter.

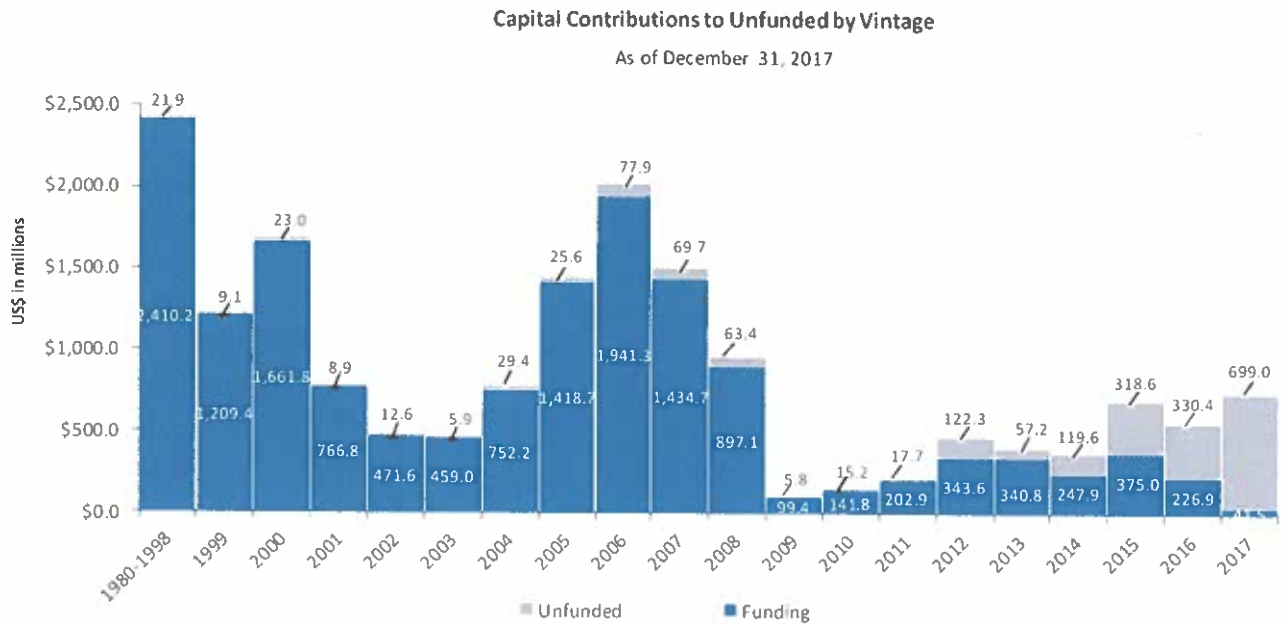


### Invested Capital by Vintage Year

The following chart provides unfunded commitments by vintage year as a percentage of the Portfolio's total unfunded commitments. Vintage years 2014 through 2017 make up 68.5% of the Portfolio's unfunded commitments.



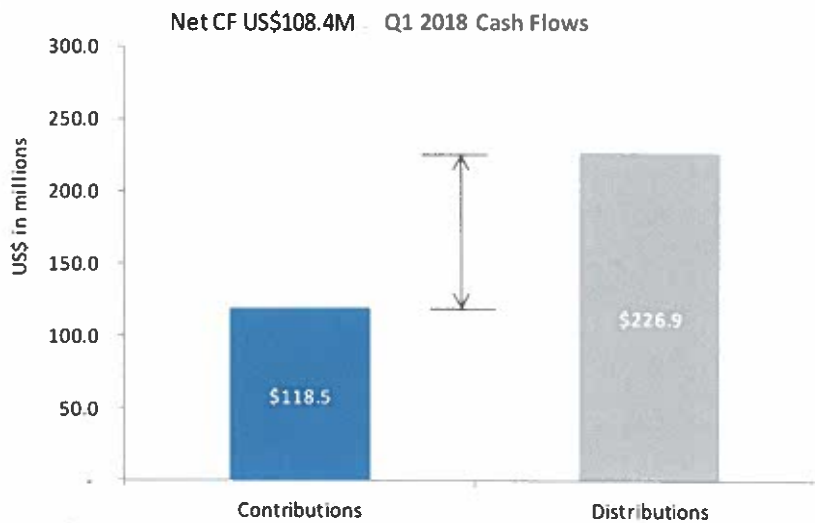
The following chart provides capital contributions (management fees and expenses included) and unfunded capital commitments, by vintage year.



## Subsequent Cash Flows

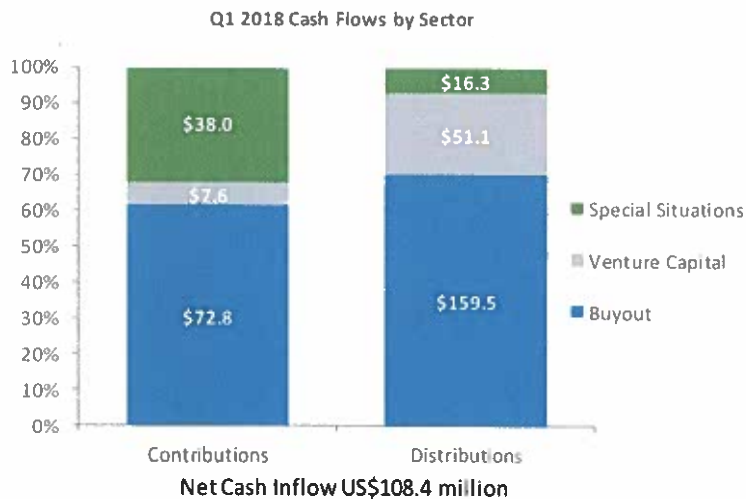
### Subsequent Cash Flow Activity

Subsequent to quarter-end through March 31, 2018, the Portfolio made US\$118.5 million of contributions and received US\$226.9 million of distributions, for a net cash inflow of US\$108.4 million, a decrease of 30.0% from the previous quarter total.



### Subsequent Cash Flow by Sector

The largest concentration of capital calls and distributions during the time period was in the Buyout sector, resulting in net cash inflows of US\$108.4 million.



## IV. Exhibits

**Exhibit A – Investments by Vintage Year**

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Vintage Year  
As of December 31, 2017

Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile <sup>(3)</sup>	Upper Quartile <sup>(3)</sup>	Quartile Ranking
<b>1980</b>											
Zero Stage II	Venture Capital	2,000,000	2,000,000	628,401							
<b>Total: 1980</b>		<b>\$ 2,000,000</b>	<b>\$ 2,000,000</b>	<b>\$ 628,401</b>							
<b>1985</b>											
Fostin Capital	Venture Capital	10,000,000	10,000,000	10,535,024							
Keystone Ventures II	Venture Capital	10,000,000	10,000,000	22,401,982							
NEPA Venture	Venture Capital	2,000,000	2,000,000	12,132,452							
PNC Ventures	Buyout	5,000,000	5,000,000	12,055,375							
Pittsburgh Seed Fund	Venture Capital	2,000,000	2,000,000	1,016,649							
TDH II	Venture Capital	9,000,000	9,000,000	15,990,106							
<b>Total: 1985</b>		<b>\$ 38,000,000</b>	<b>\$ 38,000,000</b>	<b>\$ 74,131,588</b>							
<b>1987</b>											
APA Fostin	Venture Capital	20,000,000	20,000,000	77,278,523							
CEO Ventures S	Venture Capital	8,000,000	982,003	1,239,189							
<b>Total: 1987</b>		<b>\$ 28,000,000</b>	<b>\$ 20,982,003</b>	<b>\$ 78,517,712</b>							
<b>1988</b>											
Brentwood Buyout Fund	Buyout	12,500,000	12,548,440	21,955,297							
Murphy & Fauver	Venture Capital	5,200,000	5,194,735	7,862,758							
RR & Z PA Fund #1	Venture Capital	10,000,000	10,000,000	19,606,155							
<b>Total: 1988</b>		<b>\$ 27,700,000</b>	<b>\$ 27,743,175</b>	<b>\$ 49,424,210</b>							
<b>1989</b>											
CEO Ventures II	Venture Capital	7,500,000	7,483,903	5,275,003							
Cole Hennessy & Simmons	Buyout	10,000,000	9,650,000	29,464,414							
Fostin Capital II	Venture Capital	8,000,000	7,500,000	11,613,178							
<b>Total: 1989</b>		<b>\$ 25,500,000</b>	<b>\$ 24,633,903</b>	<b>\$ 46,352,595</b>							
<b>1990</b>											
APAX Capital Risque III (France)	Buyout	5,000,000	5,103,877	11,622,162							
APAX Germany	Venture Capital	5,200,000	5,246,602	12,685,354							
Grotech PA III	Venture Capital	3,000,000	3,000,000	2,910,452							
Permira UK Venture Fund III	Venture Capital	9,063,438	8,946,988	26,295,739							
Point Ventures II	Venture Capital	1,000,000	1,000,000	1,313,407							
<b>Total: 1990</b>		<b>\$ 23,263,438</b>	<b>\$ 23,297,467</b>	<b>\$ 54,827,114</b>							
<b>1991</b>											
Hellman & Friedman Capital Partners III	Buyout	21,130,323	23,218,222	39,807,943							
<b>Total: 1991</b>		<b>\$ 21,130,323</b>	<b>\$ 23,218,222</b>	<b>\$ 39,807,943</b>							
<b>1992</b>											
Healthcare Ventures III	Venture Capital	15,000,000	15,000,000	31,477,743							
NEPA Venture-II	Venture Capital	7,500,000	7,500,000	34,879,769							
<b>Total: 1992</b>		<b>\$ 22,500,000</b>	<b>\$ 22,500,000</b>	<b>\$ 66,357,512</b>							

**Commonwealth of Pennsylvania State Employees' Retirement System**

Schedule of Private Equity Investments by Vintage Year

As of December 31, 2017

Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(1)</sup>	Upper Quartile TVM <sup>(3)</sup>	Quartile Ranking (TVM)
<b>1993</b>											
Blackstone Capital II	Buyout	40,000,000	42,438,924	96,997,924							
Charterhouse Equity Partners II	Buyout	40,000,000	42,757,326	101,547,757							
Grotech Partners IV	Venture Capital	25,000,000	25,000,000	44,252,767							
Kefso Investment Associates V	Buyout	40,000,000	53,807,706	153,659,812							
Keystone Venture IV	Venture Capital	15,000,000	14,980,880	11,417,691							
Madison Dearborn Capital Partners	Buyout	15,000,000	14,449,521	49,149,700							
New Enterprise Associates VI	Venture Capital	25,000,000	25,000,000	200,811,085							
P/A Fund I	Venture Capital	30,000,000	30,000,000	66,835,378							
TA/Advent VII	Buyout	25,000,000	25,000,000	96,585,496							
<b>Total: 1993</b>		<b>\$ 255,000,000</b>	<b>\$ 273,434,357</b>	<b>\$ 821,257,610</b>							
<b>1994</b>											
Bachow Investments III	Venture Capital	25,000,000	24,969,997	26,202,538							
Code Hennessy & Simmons III	Buyout	20,000,000	20,000,000	69,888,354							
Edison Venture Fund III	Venture Capital	25,000,000	25,000,000	48,625,410							
Fairview Capital	Venture Capital	10,000,000	10,000,000	4,672,939							
Landmark Equity IV	Special Situations	14,923,291	12,495,850	18,815,175							
TCW Special Credits V	Special Situations	35,000,000	35,000,000	60,857,854							
<b>Total: 1994</b>		<b>\$ 129,923,291</b>	<b>\$ 127,465,847</b>	<b>\$ 229,062,270</b>							
<b>1995</b>											
Clayton Dubilier & Rice V	Buyout	50,000,000	49,736,502	58,935,059							
Hellman & Friedman Capital Partners III	Buyout	50,000,000	40,308,123	91,816,515							
Landmark Equity Partners V	Special Situations	19,624,113	19,391,580	23,842,709							
OCM Opportunities Fund	Special Situations	24,000,000	24,000,000	39,330,886							
Sprout VII	Venture Capital	18,000,000	18,000,000	48,331,682							
Summit IV	Buyout	25,000,000	24,000,000	183,497,742							
Weston Presidio II	Buyout	20,000,000	17,000,000	41,383,116							
<b>Total: 1995</b>		<b>\$ 206,624,113</b>	<b>\$ 191,936,205</b>	<b>\$ 487,137,709</b>							
<b>1996</b>											
B III Capital Partners	Special Situations	35,000,000	34,423,917	50,540,547							
DJ Merchant Banking Fund II	Buyout	75,000,000	80,090,261	106,469,101							
Media/Communication III	Buyout	25,000,000	23,593,750	38,175,382							
New Enterprise Associates VII	Venture Capital	30,000,000	30,000,000	102,798,917							
OCM Principal Opportunities	Special Situations	25,000,000	25,000,000	36,286,472							
Permira UK Venture Fund IV	Venture Capital	15,248,000	15,794,739	23,596,190							
Polaris Venture Partners	Venture Capital	15,000,000	14,520,000	46,594,679							
RRZ Private Equity	Venture Capital	20,000,000	19,144,687	12,188,287							
TL Ventures III	Venture Capital	15,000,000	15,000,000	20,773,654							
Vestar Capital Partners III	Buyout	25,000,000	22,288,809	27,746,687							
<b>Total: 1996</b>		<b>\$ 280,248,000</b>	<b>\$ 279,856,163</b>	<b>\$ 465,169,916</b>							



Commonwealth of Pennsylvania State Employees' Retirement System

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As of December 31, 2017

Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(1)</sup>	TVM	Upper Quartile IRR <sup>(1)</sup>	Upper Quartile TVM <sup>(1)</sup>	Quartile Ranking (TVM)
<b>1997</b>											
ABRY Broadcast Partners III	Buyout	25,000,000	20,394,093	28,932,345							
APAX Germany II	Venture Capital	8,737,262	8,455,477	17,367,332							
APAX UK Ventures VI	Venture Capital	6,918,899	6,918,899	13,274,906							
Apollo Investment Fund IV	Buyout	75,000,000	72,079,063	124,814,033							
Blackstone Capital III	Buyout	75,000,000	74,295,009	155,123,498							
Charterhouse Equity Partners III	Buyout	50,000,000	52,598,202	76,093,084							
Code Hennessy & Simmans II	Buyout	40,000,000	38,423,990	56,551,057							
Fairview II	Venture Capital	10,000,000	9,869,194	4,074,860							
Frontenac VII	Buyout	40,000,000	40,000,000	55,957,155							
GTCR V	Buyout	11,400,000	11,400,000	20,777,730							
Halpern Denny Fund III	Buyout	25,000,000	24,999,991	5,307,874							
Harbourvest IPEP II	Buyout	25,000,000	24,500,000	34,075,106							
Healthcare Ventures V	Venture Capital	25,000,000	25,000,000	54,330,986							
J.H. Whitney Equity Fund III	Buyout	20,000,000	19,971,316	50,875,134							
Keystone V	Venture Capital	25,000,000	25,000,000	2,320,252							
Madison Dearborn Capital Partners II	Buyout	40,000,000	39,472,443	93,274,048							
Mid-Atlantic Venture Fund III	Venture Capital	20,008,308	20,000,000	5,654,702							
OCM Opportunities Fund II	Special Situations	40,000,000	40,000,000	60,366,957							
P/A Fund III	Venture Capital	100,000,000	99,366,750	161,607,393							
Permira European Fund	Buyout	33,494,536	32,159,947	84,442,672							
TA/Advent VII	Buyout	30,000,000	29,400,000	67,141,158							
TPG Partners II	Buyout	75,000,000	71,335,785	127,821,079							
<b>Total: 1997</b>		<b>\$ 800,559,005</b>	<b>\$ 785,640,159</b>	<b>\$ 1,300,183,361</b>							
<b>1998</b>											
Clayton Dubilier & Rice VI	Buyout	50,000,000	33,699,959	57,841,145							
GTCR VI	Buyout	50,000,000	49,520,987	44,453,905							
Grotech Partners V	Venture Capital	25,000,000	25,000,000	24,590,624							
HarbourVest IPEP III	Buyout	40,000,000	39,400,000	61,020,829							
JP Morgan Venture Capital Investors	Venture Capital	100,000,000	93,284,186	70,917,967							
Kelso VI	Buyout	75,000,000	64,061,730	92,977,515							
Lexington Capital Partners I	Special Situations	40,000,000	39,538,000	52,625,424							
Media/Communications IV	Buyout	25,000,000	23,125,000	17,340,500							
Polaris Venture Partners II	Venture Capital	25,000,000	24,750,000	40,761,283							
Summit V	Buyout	37,500,000	36,187,500	50,154,672							
Thomas H. Lee Equity Fund IV	Buyout	70,000,000	60,512,410	52,506,686							
Weston Presidio III	Buyout	35,000,000	31,989,586	36,514,452							
<b>Total: 1998</b>		<b>\$ 572,500,000</b>	<b>\$ 521,069,358</b>	<b>\$ 601,705,002</b>							

Commonwealth of Pennsylvania State Employees' Retirement System

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<b>1999</b>											
ABS Capital Partners III	Buyout	35,000,000	27,764,683	18,757,336							
APAX Europe IV	Buyout	32,424,000	29,909,800	40,876,051							
APEX Investment Fund IV	Venture Capital	25,000,000	25,000,000	5,661,282							
Adams Capital Management III	Venture Capital	30,000,000	30,000,000	4,117,043							
Asia Pacific Growth Fund III	Buyout	15,000,000	14,627,000	16,708,736							
Atlas Venture Fund IV	Venture Capital	26,000,000	21,630,650	8,556,942							
Cerberus Institutional Partners	Special Situations	35,000,000	35,000,000	79,906,454							
Code Hennessy & Simmons IV	Buyout	100,000,000	97,230,000	156,773,531							
Cross Atlantic Technology Fund	Venture Capital	20,000,000	19,965,000	23,742,240							
Draper Fisher Jurvetson Fund VI	Venture Capital	8,000,000	8,000,000	5,347,835							
Draper Triangle Ventures	Venture Capital	20,000,000	16,394,757	11,923,531							
Frazier Healthcare III	Venture Capital	30,000,000	30,000,000	13,051,758							
Great Hill Equity Partners	Buyout	30,000,000	27,858,676	31,339,243							
Gryphon Partners II	Buyout	35,000,000	32,173,416	41,953,023							
HarbourVest Partners VI	Buyout	200,000,000	196,000,000	239,789,338							
Hellman & Friedman Capital Partners IV	Buyout	75,000,000	64,681,459	189,025,929							
Invened Catalyst Fund	Buyout	25,000,000	13,695,639	11,020,776							
J.H. Whitney IV	Buyout	20,000,000	17,658,772	7,543,844							
LLR Equity Partners	Buyout	25,000,000	24,500,000	52,615,238							
Lexington Capital Partners III	Special Situations	35,000,000	34,516,449	43,363,378							
Madison Dearborn Capital Partners III	Buyout	75,000,000	74,852,182	114,509,416							
New Enterprise Associates IX	Venture Capital	20,000,000	19,600,000	7,721,519							
Newbridge Asia II	Buyout	15,000,000	14,756,943	14,567,191							
Oakhill Capital Partners	Buyout	50,000,000	50,156,830	93,999,577							
Palamon European Equity	Buyout	29,779,989	33,537,469	67,773,611							
Summit Accelerator Fund	Venture Capital	8,000,000	7,560,000	13,302,985							
TL Ventures IV	Venture Capital	35,000,000	35,000,000	26,908,029							
TPG Partners III	Buyout	75,000,000	61,238,756	165,990,273							
US Venture Partners VII	Venture Capital	13,750,000	13,750,000	5,057,779							
Vestar Capital Partners IV	Buyout	100,000,000	90,331,274	172,389,522							
<b>Total: 1999</b>		<b>\$ 1,242,953,989</b>	<b>\$ 1,167,389,755</b>	<b>\$ 1,684,293,410</b>							

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Vintage Year

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Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(4)</sup>	Quartile Ranking (TVM)
<b>2000</b>											
ABACUS Fund Partners	Venture Capital	15,000,000	15,000,000	8,949,405							
ABRY Partners IV	Buyout	35,000,000	22,500,122	74,633,973							
ABS Capital Partners IV	Buyout	35,000,000	28,789,304	68,287,633							
APAX Europe V	Buyout	53,262,000	68,764,274	150,017,403							
Adams Capital Management III	Venture Capital	30,000,000	30,000,000	7,536,905							
Advanced Technology Ventures VI	Venture Capital	10,000,000	10,000,000	4,498,689							
Alloy Ventures 2000	Venture Capital	20,000,000	20,000,000	5,964,401							
Apax Excelsior VI	Buyout	35,000,000	33,957,540	56,569,467							
Apollo Investment Fund V	Buyout	50,000,000	42,484,039	122,447,998							
Atlas Venture Fund V	Venture Capital	37,200,000	34,699,263	40,751,899							
Audax Private Equity Fund	Buyout	35,000,000	33,157,787	55,936,816							
BC European Capital VII	Buyout	32,658,500	37,740,202	96,576,440							
Bain Capital Fund VII	Buyout	25,000,000	23,562,500	49,213,680							
Blackstone Communications Partners I	Buyout	25,000,000	22,673,931	30,998,189							
Charles River Partnership XI	Venture Capital	11,032,259	11,032,259	14,422,548							
DLJ Merchant Banking Fund III	Buyout	85,000,000	82,782,001	188,607,421							
Draper Fisher Jurvetson Fund VII	Venture Capital	20,000,000	20,000,000	9,781,991							
Francisco Partners	Buyout	50,000,000	46,730,605	61,464,903							
GTCR VII	Buyout	55,000,000	47,987,500	121,878,298							
Great Hill Equity Partners III	Buyout	35,000,000	33,224,137	78,337,666							
Halpern Denny Fund III	Buyout	25,000,000	22,446,273	28,562,555							
Healthcare Ventures VI	Venture Capital	35,000,000	35,000,000	6,534,943							
InterWest Partners VIII	Venture Capital	25,000,000	24,850,000	12,953,647							
J.H. Whitney V	Buyout	20,000,000	22,559,318	44,904,355							
JP Morgan Venture Capital Investors III	Venture Capital	100,000,000	98,029,678	120,867,109							
Kline Hawkes Pacific	Venture Capital	15,000,000	15,000,000	7,024,260							
Madison Dearborn Capital Partners IV	Buyout	90,000,000	87,106,109	169,072,775							
Media/Communications Ventures Fund V	Venture Capital	35,000,000	33,781,095	56,014,639							
Mentech Capital Partners III	Venture Capital	26,475,166	24,842,529	37,926,932							
Mid-Atlantic Venture Fund IV	Venture Capital	30,000,000	30,000,000	9,177,849							
New Enterprise Associates X	Venture Capital	35,000,000	35,000,000	32,493,542							
Newbridge Asia III	Buyout	15,000,000	12,743,920	55,728,660							
Novo Vita	Venture Capital	11,616,498	11,328,462	5,382,912							
OCM Opportunities Fund III	Special Situations	60,000,000	60,000,000	90,237,385							

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Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(4)</sup>	Quartile Ranking (TVM)
Permira European Fund II	Buyout	48,000,000	45,672,612	91,464,087							
Polaris Venture Partners III	Venture Capital	50,000,000	49,500,000	35,229,712							
Providence Equity Partners IV	Buyout	25,000,000	21,894,740	56,040,748							
SCP Private Equity Partners II	Venture Capital	25,000,000	23,026,869	8,534,307							
TA IX	Buyout	45,000,000	43,650,000	105,863,474							
TL Ventures V	Venture Capital	40,000,000	40,000,000	16,218,967							
Thomas H. Lee Equity Fund V	Buyout	100,000,000	97,772,983	175,615,745							
Three Arch Capital	Venture Capital	20,000,000	19,500,000	16,548,697							
US Venture Partners VIII	Venture Capital	26,250,000	25,830,000	32,982,728							
Weston Presidio IV	Buyout	35,000,000	34,451,015	40,323,109							
Worldview Technology Partners IV	Venture Capital	18,130,023	16,951,175	7,863,559							
<b>Total: 2000</b>		<b>\$ 1,649,624,446</b>	<b>\$ 1,596,022,242</b>	<b>\$ 2,510,442,421</b>							
<b>2001</b>											
ABRY Mezzanine Partners	Special Situations	30,000,000	24,857,300	49,707,116							
AG Capital Recovery Partners II	Special Situations	17,600,000	17,600,000	27,534,983							
APEX Investment Fund V	Venture Capital	20,000,000	20,122,702	7,739,736							
Accel Europe	Venture Capital	15,000,000	11,350,000	18,110,053							
Advanced Technology Ventures VIII	Venture Capital	27,000,000	26,797,500	29,080,722							
Atlas Venture Fund VI	Venture Capital	24,800,000	23,283,720	16,780,941							
Austin Ventures VIII	Venture Capital	20,932,140	20,932,140	33,669,094							
BC European Capital VII Top Up	Buyout	10,046,300	12,278,596	32,386,202							
Blackstone Capital IV	Buyout	75,000,000	67,778,433	184,703,538							
Cerberus Institutional Partners Series Two	Special Situations	35,000,000	30,100,793	93,677,958							
Cross Atlantic Technology Fund II	Venture Capital	32,900,000	31,815,285	33,589,061							
Frazier Healthcare IV	Venture Capital	30,000,000	28,257,985	24,821,191							
Harbourvest IPEP IV	Buyout	40,000,000	39,000,000	67,144,292							
Highland Capital Partners VI	Venture Capital	25,000,000	25,000,000	37,031,136							
IVP II	Venture Capital	8,600,000	8,564,472	3,576,595							
Lexington Capital Partners V	Special Situations	75,000,000	74,322,207	122,372,999							
Matlin Patterson Global Opportunities Partners	Special Situations	35,000,000	30,007,727	56,715,164							
Morgenthaler Partners VII	Venture Capital	35,000,000	35,000,000	30,543,944							
OCM Opportunities Fund IV	Special Situations	70,000,000	70,000,000	115,665,253							
OCM Principal Opportunities II	Special Situations	25,000,000	25,000,000	43,942,453							
Parthenon Investors II	Buyout	20,000,000	19,771,146	36,154,879							
Polaris Venture Partners IV	Venture Capital	50,000,000	49,750,000	47,129,701							
Summit Ventures VI	Buyout	62,000,000	62,000,000	134,008,940							
<b>Total: 2001</b>		<b>\$ 783,878,440</b>	<b>\$ 753,590,006</b>	<b>\$ 1,246,085,951</b>							

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<b>2002</b>											
AG Capital Recovery Partners III	Special Situations	20,000,000	16,000,000	25,183,359							
Alloy Ventures 2002	Venture Capital	25,000,000	24,832,999	15,448,474							
Alpha Private Equity Fund 4	Buyout	26,508,000	35,605,050	77,986,040							
Avenue Special Situations Fund III	Special Situations	50,000,000	37,387,969	62,628,424							
Berkshire Fund VI	Buyout	20,000,000	17,260,685	45,989,363							
Charterhouse Capital Partners VII	Buyout	55,482,500	52,250,090	109,645,407							
GTCR VIII	Buyout	75,000,000	69,393,599	114,671,436							
Healthcare Ventures VII	Venture Capital	35,000,000	35,000,000	22,026,107							
J.W. Childs Equity Partners III	Buyout	40,000,000	38,233,446	76,553,620							
JP Morgan US Corp Finance Investors II	Special Situations	50,000,000	47,843,124	84,808,665							
Leeds Equity Partners IV	Buyout	20,000,000	18,540,214	22,913,831							
Nordic Capital V	Buyout	34,996,500	42,214,176	132,407,045							
Sterling Capital Partners I	Buyout	15,000,000	14,146,729	30,923,365							
<b>Total: 2002</b>		<b>\$ 466,987,000</b>	<b>\$ 448,708,081</b>	<b>\$ 821,185,136</b>							
<b>2003</b>											
AG Capital Recovery Partners IV	Special Situations	50,000,000	35,415,216	55,993,470							
Abingworth BioVentures IV	Venture Capital	20,000,000	19,700,000	23,712,133							
Alloy Annex I	Venture Capital	5,000,000	5,000,000	1,958,747							
Cerberus Institutional Partners Series Three	Special Situations	35,000,000	22,321,354	48,807,137							
HarbourVest Partners VIII	Buyout	75,000,000	73,687,500	96,989,062							
Kelso VII	Buyout	40,000,000	38,453,157	65,700,625							
New Enterprise Associates 11	Venture Capital	25,000,000	25,000,000	57,197,124							
Novitas Capital III	Venture Capital	10,000,000	8,337,867	3,924,047							
Permira European Fund III	Buyout	115,960,000	123,774,404	217,778,356							
Quaker BioVentures	Venture Capital	20,000,000	19,757,627	5,472,501							
ShoreView Capital Partners	Buyout	38,000,000	26,859,811	56,043,792							
TPG Partners IV	Buyout	30,000,000	27,502,731	56,961,132							
Three Arch Partners IV	Venture Capital	20,000,000	19,050,000	20,764,485							
<b>Total: 2003</b>		<b>\$ 483,960,000</b>	<b>\$ 444,859,667</b>	<b>\$ 711,302,611</b>							
<b>2004</b>											
ABRY Partners V	Buyout	45,000,000	36,658,306	83,011,659							
AXA Secondary Fund III	Special Situations	26,000,000	21,733,291	37,244,706							
AXA Secondary Fund III-2	Special Situations	14,000,000	11,677,210	19,062,764							
Apax Europe VI	Buyout	76,349,190	74,145,979	136,432,837							
Bain Capital Fund VIII-E	Buyout	12,144,000	12,299,670	19,631,405							
Clearstone Venture Partners III-A	Venture Capital	25,000,000	24,250,000	12,828,843							
Draper Triangle Ventures II	Venture Capital	12,000,000	11,490,032	13,724,504							
Elevation Partners	Buyout	35,000,000	27,052,500	50,013,176							
Energy Spectrum Partners IV	Buyout	50,000,000	47,543,699	86,714,979							
First Reserve Fund X	Buyout	30,000,000	29,215,285	54,728,700							
Gryphon Partners III	Buyout	30,000,000	34,094,131	51,691,321							
Hellman & Friedman Capital Partners V	Buyout	80,000,000	70,568,846	191,936,442							

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IVP III	Venture Capital	10,500,000	9,555,000	13,116,820							
InterWest Partners IX	Venture Capital	20,000,000	19,430,000	21,478,462							
Knightsbridge Venture Capital VI	Venture Capital	20,000,000	18,266,667	15,207,280							
Lime Rock Partners III	Buyout	15,000,000	13,833,501	7,379,936							
LLR Equity Partners II	Buyout	25,000,000	25,000,000	42,098,368							
Matlin Patterson Global Opportunities Partners II	Special Situations	30,000,000	29,962,912	10,578,309							
OCM Opportunities Fund V	Special Situations	40,000,000	40,000,000	65,205,010							
Oak Investment Partners XI	Venture Capital	35,000,000	35,000,000	21,790,624							
Oaktree Capital Management	Special Situations	40,000,000	39,999,995	123,404,426							
Pitango Venture Capital Fund IV	Venture Capital	20,000,000	20,266,266	16,748,067							
Providence Equity Partners V	Buyout	45,000,000	41,090,834	51,743,883							
UMS Partners Fund I	Buyout	5,000,000	5,000,000	3,004,752							
Versa Capital Partners	Special Situations	20,000,000	22,868,000	15,988,714							
<b>Total: 2004</b>		<b>\$ 760,993,190</b>	<b>\$ 721,002,124</b>	<b>\$ 1,164,765,987</b>							
<b>2005</b>											
ABS Capital Partners V	Buyout	20,000,000	19,404,254	57,297,716							
AG Capital Recovery Partners V	Special Situations	20,000,000	20,000,000	22,293,130							
Alloy Ventures 2005	Venture Capital	25,000,000	25,000,000	16,519,861							
Apollo Investment Fund VI	Buyout	40,000,000	38,289,202	54,741,007							
Audax Private Equity Fund II	Buyout	25,000,000	25,506,073	45,110,929							
Austin Ventures IX	Venture Capital	15,000,000	15,127,754	16,798,717							
Avenue Special Situations Fund IV	Special Situations	50,000,000	49,911,855	69,301,932							
BC European Capital VIII	Buyout	98,107,500	97,137,090	112,624,971							
Birchmere Ventures III	Venture Capital	10,000,000	9,082,885	8,692,184							
Brynwood Partners V	Buyout	10,000,000	9,646,565	18,911,882							
Code Hennessy & Simmons V	Buyout	50,000,000	52,664,489	91,608,248							
Frazier Healthcare V	Venture Capital	30,000,000	27,629,471	46,754,238							
HIPEP V-Asia Pacific & Rest of World	Buyout	30,000,000	28,200,000	32,034,370							
Healthcare Ventures VIII	Venture Capital	30,000,000	29,775,000	23,683,732							
InterMedia Partners VII	Buyout	15,000,000	14,749,398	16,403,677							
J. H. Whitney VI	Buyout	50,000,000	46,555,172	41,989,295							
JMI Equity Fund V	Buyout	24,000,000	21,891,322	123,293,390							
JP Morgan Venture Capital Investors III	Venture Capital	100,000,000	99,249,283	87,880,853							
Lexington Capital Partners VI	Special Situations	50,000,000	52,232,143	65,130,627							
Lightspeed Venture Partners VII	Venture Capital	18,000,000	15,320,168	33,163,896							
Lime Rock Resources	Buyout	20,000,000	17,129,968	25,286,779							
Meridian Venture Partners II	Buyout	10,000,000	10,000,000	21,939,244							
Morgenthaler Partners VIII	Venture Capital	35,000,000	35,046,903	46,591,525							
Motron II B	Buyout	48,204,998	41,261,710	38,726,742							
New York Life Capital Partners III	Buyout	50,000,000	50,454,371	47,048,660							
Newbridge Asia IV	Buyout	40,000,000	37,967,906	82,887,170							
Nordic Capital VI	Buyout	54,369,000	59,249,208	95,554,157							
OCM/GFI Power Opportunities Fund II	Buyout	25,000,000	13,110,559	41,644,215							
OCM Opportunities Fund VI	Special Situations	40,000,000	40,000,000	63,171,009							

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<b>Total: 2005</b>		<b>\$ 1,410,929,988</b>	<b>\$ 1,344,439,267</b>	<b>\$ 2,026,842,294</b>							
<b>2006</b>											
ABRY Senior Equity II	Special Situations	30,000,000	25,405,779	44,684,849							
AXA Secondary Fund IV	Special Situations	80,000,000	66,908,452	97,663,182							
Alpha Private Equity Fund 5	Buyout	57,796,800	62,184,152	94,043,299							
Artiman Ventures II	Venture Capital	25,000,000	20,967,427	13,141,575							
Asia Alternatives Capital Partners	Buyout	50,000,000	23,406,269	36,504,058							
Avenue Asia Special Situations Fund IV	Special Situations	50,000,000	31,897,973	34,199,724							
Bain Capital Fund IX	Buyout	75,000,000	72,937,500	109,233,645							
Bain Capital IX Coinvestment Fund	Buyout	15,000,000	14,456,250	21,969,013							
Berkshire Fund VII	Buyout	32,000,000	29,159,700	52,427,656							
Blackstone Capital Partners V	Buyout	150,000,000	141,252,710	231,430,607							
Brait IV	Buyout	25,000,000	15,396,613	2,873,282							
Care Capital Investments III	Venture Capital	25,000,000	19,990,191	11,823,694							
Centerbridge Capital Partners I	Special Situations	50,000,000	51,804,352	107,910,945							
Cerberus Institutional Partners Series Four	Special Situations	75,000,000	68,695,715	105,114,187							
Charterhouse Capital Partners VIII	Buyout	63,826,976	67,961,522	70,399,353							
Chequers Capital XV	Buyout	31,133,996	28,814,337	57,540,479							
Devon Park Bioventures	Venture Capital	10,842,697	8,417,877	25,366,934							
Eureka II	Buyout	20,000,000	16,769,862	17,102,126							
First Reserve Fund XI	Buyout	60,000,000	61,497,082	40,018,579							
Francisco Partners II	Buyout	30,000,000	29,186,046	40,942,804							
GTCR IX	Buyout	50,000,000	46,134,343	79,736,269							
Great Hill Equity Partners III	Buyout	35,000,000	31,191,528	41,373,122							
HarbourVest Partners VIII	Buyout	100,000,000	98,000,000	105,485,514							
Hellman & Friedman Capital Partners VI	Buyout	125,000,000	112,971,649	196,686,138							
Highland Capital Partners VII	Venture Capital	35,000,000	35,000,000	28,655,565							
Lime Rock Partners IV	Buyout	25,000,000	23,650,060	19,382,889							
Madison Dearborn Capital Partners V	Buyout	75,000,000	66,925,260	109,856,905							
Meritech Capital Partners III	Venture Capital	35,000,000	35,000,000	182,317,506							
New Enterprise Associates 12	Venture Capital	35,000,000	35,626,297	41,560,673							
NewSpring Growth Capital II	Buyout	10,000,000	8,757,900	13,962,639							
OCM Principal Opportunities Fund IV	Special Situations	20,000,000	20,400,000	32,981,361							
Oak Investment Partners XII	Venture Capital	40,000,000	39,214,554	28,177,778							
PNC Equity Partners II	Buyout	15,000,000	12,151,978	26,013,377							
Permira IV	Buyout	127,779,198	123,910,382	188,554,409							
Polaris Venture Partners V	Venture Capital	50,000,000	49,000,000	42,128,792							
Siguler Guff BRIC Opportunities Fund	Buyout	10,000,000	9,500,000	9,889,460							

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<b>2006</b>											
Sofinnova Venture Partners VII	Venture Capital	20,000,000	19,204,944	29,241,579							
TAX	Buyout	70,000,000	67,550,000	89,682,009							
TPG Partners V	Buyout	93,375,730	89,664,515	108,225,531							
Thomas H. Lee Equity Fund VI	Buyout	50,000,000	49,535,152	58,563,023							
<b>Total: 2006</b>		<b>\$ 1,976,755,397</b>	<b>\$ 1,830,498,371</b>	<b>\$ 2,646,864,530</b>							
<b>2007</b>											
ABRY Advanced Securities Fund	Special Situations	25,000,000	20,239,583	38,682,209							
Abingworth BioVentures V	Venture Capital	33,775,000	26,704,656	37,604,294							
Advent Latin American Private Equity Fund IV	Buyout	30,000,000	29,810,236	37,625,921							
Apax Europe VII	Buyout	132,170,235	132,639,474	153,110,673							
Asia Alternatives Capital Partners II	Buyout	50,000,000	26,666,018	22,439,619							
Audax Private Equity Fund III	Buyout	37,000,000	39,579,527	75,365,366							
Avenue Special Situations Fund V	Special Situations	70,000,000	69,901,575	92,786,535							
Bain Capital Asia Fund	Buyout	12,000,000	11,020,944	16,105,376							
Bain Capital Fund X	Buyout	90,000,000	86,891,010	110,748,172							
Bain Capital X Coinvestment Fund	Buyout	5,000,000	1,225,000	1,200,987							
Baring Vostok Private Equity Fund IV	Buyout	30,000,000	27,455,543	16,603,507							
Battery Ventures VIII, L.P.	Venture Capital	25,000,000	25,000,000	44,528,658							
CID Greater China Venture Capital Fund II	Venture Capital	20,000,000	15,642,417	24,179,486							
CVI Global Value Fund	Special Situations	60,000,000	57,000,000	82,038,032							
Dover Street VII	Special Situations	30,000,000	28,675,841	35,714,799							
Energy Spectrum Partners V	Buyout	30,000,000	24,389,673	51,487,729							
Excelsior Capital Asia Partners III	Buyout	25,000,000	19,930,971	12,628,664							
Highland Consumer Fund I	Venture Capital	25,000,000	25,000,000	10,984,976							
IVP IV	Venture Capital	14,000,000	13,300,000	13,996,728							
Insight Venture Partners VI	Venture Capital	30,000,000	28,895,502	69,400,028							
JMI Equity Fund VI	Buyout	40,000,000	36,591,240	66,416,764							
Kelso VIII	Buyout	150,000,000	127,406,578	121,228,686							
Nordic Capital VII	Buyout	92,519,165	88,584,871	76,725,833							
OCM Opportunities Fund VII	Special Situations	40,000,000	40,000,000	51,627,682							
OCM Opportunities Fund VII b	Special Situations	40,000,000	36,000,000	59,351,957							
Pitango Venture Capital Fund V	Venture Capital	30,000,000	27,917,626	16,866,840							
Providence Equity Partners VI	Buyout	50,000,000	50,607,737	53,598,304							
Quaker BioVentures II	Venture Capital	25,000,000	22,474,297	17,040,348							
SFC Energy Partners I	Buyout	25,000,000	22,291,498	22,641,255							
Sankaty Credit Opportunities III	Special Situations	50,000,000	50,000,000	52,691,136							
Siguler Guff BRIC Opportunities Fund II	Buyout	25,000,000	24,500,000	15,660,527							
Sterling Capital Partners III	Buyout	32,000,000	29,792,891	30,703,208							
TPG Asia V	Buyout	22,500,000	19,733,774	20,857,655							
W Capital Partners II	Special Situations	40,000,000	38,333,987	52,066,422							
Weathergag Venture Capital	Venture Capital	25,000,000	21,875,000	23,231,174							
<b>Total: 2007</b>		<b>\$ 1,460,964,400</b>	<b>\$ 1,347,077,469</b>	<b>\$ 1,627,939,550</b>							



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<b>2008</b>											
ABRY Partners VI	Buyout	50,000,000	55,005,441	106,026,972							
Advent International GPE VI-A	Buyout	35,000,000	34,034,207	56,945,910							
Avenue Europe Special Situations Fund	Special Situations	38,632,500	25,306,863	37,899,419							
Bain Capital Europe III	Buyout	72,432,276	65,643,043	120,041,080							
Baring India Private Equity Fund III Limited	Buyout	5,000,000	4,829,380	4,033,344							
Battery Ventures VIII Side Car Fund	Venture Capital	9,000,000	6,768,000	17,412,210							
Brynwood Partners VI	Buyout	10,000,000	10,586,341	22,799,059							
Clessidra Capital Partners II	Buyout	25,631,168	14,880,732	25,980,868							
First Reserve Fund XII	Buyout	50,000,000	50,127,154	25,337,322							
Great Hill Equity Partners IV	Buyout	25,000,000	21,827,798	40,283,036							
Guggenheim Technology Ventures I	Venture Capital	2,000,000	2,000,000	631,544							
H I G Bayside Debt & LBO Fund III	Special Situations	30,000,000	30,124,197	30,394,043							
InterWest Partners X	Venture Capital	30,000,000	25,894,500	2,300,138							
LLR Equity Partners III	Buyout	30,000,000	28,374,310	37,023,274							
Lightspeed Venture Partners VIII	Venture Capital	15,000,000	12,661,838	19,296,708							
Lime Rock Partners V	Buyout	42,500,000	39,651,821	23,057,932							
Madison Dearborn Capital Partners VI	Buyout	50,000,000	45,436,601	73,821,469							
Morgenthaler Partners IX	Venture Capital	20,000,000	20,000,000	31,155,428							
New York Life Capital Partners IV	Buyout	50,000,000	49,547,519	89,563,679							
Patriot Financial Partners	Buyout	25,000,000	25,000,000	49,139,381							
Sankaty Credit Opportunities IV	Special Situations	40,000,000	38,000,000	50,874,351							
Segulah IV	Buyout	16,705,647	14,633,586	16,931,191							
ShoreView Capital Partners II	Buyout	40,000,000	32,902,497	59,884,904							
TPG Partners VI	Buyout	44,294,641	46,395,784	52,099,942							
Templeton Strategic Emerging Markets Fund III	Special Situations	100,000,000	92,498,137	60,966,332							
Versa Capital Partners II	Special Situations	15,000,000	15,943,385	6,617,313							
Yucaipa American Alliance Fund III	Buyout	25,000,000	26,820,365	15,650,108							
<b>Total: 2008</b>		<b>\$ 896,196,232</b>	<b>\$ 834,893,499</b>	<b>\$ 1,076,166,957</b>							
<b>2009</b>											
ABS Capital Partners VI	Buyout	40,000,000	35,589,138	18,033,972							
Charterhouse Capital Partners IX	Buyout	66,385,000	54,703,031	66,885,783							
<b>Total: 2009</b>		<b>\$ 106,385,000</b>	<b>\$ 90,292,169</b>	<b>\$ 84,919,755</b>							
<b>2010</b>											
Advent Latin American Private Equity Fund V	Buyout	15,000,000	13,058,177	3,675,000							
Artman Ventures III	Venture Capital	20,000,000	18,910,000	-							
Avenue Special Situations Fund VI	Special Situations	20,000,000	19,977,798	19,360,285							
J.H. Whitney VII	Buyout	25,000,000	20,806,196	29,754,045							
OCM Opportunities Fund VIII	Special Situations	12,500,000	12,500,000	15,583,643							
OCM Opportunities Fund VIIIb	Special Situations	12,500,000	12,500,000	9,108,936							
Oaktree Power Opportunities Fund III	Buyout	25,000,000	15,666,409	14,750,569							
Weatherage Venture Capital II	Venture Capital	25,000,000	20,814,064	6,596,430							
<b>Total: 2010</b>		<b>\$ 155,000,000</b>	<b>\$ 134,232,644</b>	<b>\$ 98,828,908</b>							

**Commonwealth of Pennsylvania State Employees' Retirement System**

Schedule of Private Equity Investments by Vintage Year

As of December 31, 2017

Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(4)</sup>	Quartile Ranking (TVM)
<b>2011</b>											
ABRY Partners VII	Buyout	30,000,000	34,239,156	46,975,522							
Asia Alternatives Korea Buyout Investors (Hahn & Co)	Buyout	7,000,000	8,069,704	7,016,640							
BC European Capital IX	Buyout	26,472,535	24,607,304	16,756,961							
Berkshire Fund VIII	Buyout	30,000,000	24,829,548	15,913,709							
Francisco Partners III	Buyout	20,000,000	18,597,313	25,498,526							
H.I.G. Growth Buyouts & Equity Fund II	Buyout	15,000,000	9,179,341	3,625,749							
Insight Venture Partners VII	Venture Capital	20,000,000	19,681,600	16,529,693							
JMI Equity Fund VII	Buyout	10,000,000	8,988,735	6,536,164							
Mentech Capital Partners IV	Venture Capital	20,000,000	19,100,000	12,532,808							
SFC Energy Partners II	Buyout	25,000,000	20,006,418	2,222,349							
<b>Total: 2011</b>		<b>\$ 203,472,535</b>	<b>\$ 187,299,119</b>	<b>\$ 153,608,121</b>							
<b>2012</b>											
AXA Secondary Fund V B	Special Situations	75,000,000	57,982,442	81,416,021							
Advent International GPE VII-B	Buyout	40,000,000	35,077,182	15,159,752							
Asia Alternatives Capital Partners III	Buyout	50,000,000	48,611,544	23,818,046							
Carlyle Energy Mezzanine Opportunities Fund	Buyout	50,000,000	54,836,013	20,267,685							
Denham Commodity Partners VI	Buyout	50,000,000	42,174,709	20,839,264							
NewSpring Growth Capital III	Buyout	25,000,000	21,408,943	2,218,985							
Penn Asia Investors	Buyout	111,000,000	65,077,398	21,590,297							
<b>Total: 2012</b>		<b>\$ 421,000,000</b>	<b>\$ 325,168,231</b>	<b>\$ 185,310,050</b>							
<b>2013</b>											
Eureka Growth Capital III	Buyout	20,000,000	9,977,250	10,514,420							
FSN Capital IV L.P.	Buyout	46,049,703	35,124,589	20,112,791							
H.I.G. Bayside Loan Opp. Fund III	Special Situations	50,000,000	40,392,203	12,372,504							
Incline Equity Partners III	Buyout	15,000,000	14,657,440	13,008,388							
Insight Venture Partners VIII	Venture Capital	50,000,000	46,424,000	14,984,276							
LBC Credit Partners III	Special Situations	50,000,000	47,500,000	36,820,288							
LLR Equity Partners IV	Buyout	50,000,000	41,439,840	22,473,684							
Oaktree Opportunities Fund IX	Special Situations	50,000,000	50,000,000	16,447,715							
Platinum Equity Capital Partners III, L.P.	Special Situations	50,000,000	42,488,910	45,753,416							
<b>Total: 2013</b>		<b>\$ 381,049,703</b>	<b>\$ 328,004,232</b>	<b>\$ 192,487,482</b>							
<b>2014</b>											
Capvis Equity IV	Buyout	49,855,591	29,352,412	16,107,782							
GTCR Fund XI, LP	Buyout	25,000,000	19,452,377	5,126,612							
H.I.G. Europe Capital Partners III	Buyout	27,544,596	8,552,927	-							
Hahn & Company II	Buyout	50,000,000	27,439,493	1,508,368							
Horizon Impact Fund	Buyout	50,000,000	28,435,644	5,944,290							
Horizon Strategic Fund - Carlyle Group	Buyout	100,000,000	85,630,668	16,934,926							
KPS Special Situations Fund IV	Special Situations	25,000,000	9,821,339	5,396,135							
Mentech Capital Partners V	Venture Capital	23,000,000	17,537,500	-							
Sentinel Capital Partners V, L.P.	Buyout	10,000,000	6,577,884	2,759,408							
<b>Total: 2014</b>		<b>\$ 360,400,187</b>	<b>\$ 232,800,244</b>	<b>\$ 53,777,521</b>							

**Commonwealth of Pennsylvania State Employees' Retirement System**

Schedule of Private Equity Investments by Vintage Year

As of December 31, 2017

Investment	Sector	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	IVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(3)</sup>	Quartile Ranking (TVM)
<b>2015</b>											
ABRY Partners VIII	Buyout	25,000,000	21,140,341	3,718,970							
ADV Opportunities Fund I, L.P.	Special Situations	50,000,000	36,212,977	4,535,978							
Advent Latin American Private Equity Fund VI	Buyout	25,000,000	10,096,463	5,000,000							
Audax Private Equity Fund V	Buyout	50,000,000	22,842,782	291,352							
Blackstone Capital Partners VII, L.P.	Buyout	50,000,000	9,880,241	688,644							
Centerbridge Capital Partners III	Special Situations	30,000,000	12,816,000	1,831,013							
Clearlake Capital Partners IV, L.P.	Special Situations	15,000,000	12,016,427	8,467,662							
Draper Triangle Ventures III, LP	Venture Capital	10,000,000	5,294,967	92,073							
Francisco Partners IV	Buyout	25,000,000	19,264,578	-							
Hellman & Friedman Capital Partners VIII	Buyout	50,000,000	21,782,304	3,528,945							
H.I.G. Bayside Loan Opp Fund IV	Special Situations	25,000,000	9,442,545	5,055,089							
H.I.G. Brazil and Latin America Partners	Buyout	50,000,000	8,433,533	9,139							
Insight Venture Partners IX	Venture Capital	50,000,000	39,870,605	1,339,968							
JMI Equity Fund VIII	Buyout	25,000,000	12,434,720	2,758,153							
Lightspeed India Partners I	Venture Capital	15,000,000	8,031,750	-							
Primavera Capital Fund II	Buyout	50,000,000	41,650,378	1,253,994							
Ridgmont Equity Partners II	Buyout	50,000,000	32,205,876	5,868,894							
RRJ Capital Master Fund III	Special Situations	50,000,000	18,011,410	1,525,850							
Sterling Group Partners IV, L.P.	Buyout	20,000,000	6,319,097	342,813							
<b>Total: 2015</b>		<b>\$ 665,000,000</b>	<b>\$ 347,746,994</b>	<b>\$ 46,308,537</b>							
<b>2016</b>											
Advent International GPE VIII-B	Buyout	50,000,000	21,143,691	-							
ASF VII B LP	Special Situations	100,000,000	21,200,023	303,544							
ASF VII PA Co-Invest	Special Situations	50,000,000	13,018,989	-							
FSN Capital V	Buyout	77,189,328	9,044,617	259,266							
Permira VI	Buyout	56,202,000	11,727,041	-							
Providence Strategic Growth II	Buyout	60,000,000	33,369,024	-							
Vista Equity Partners Fund VI	Buyout	150,000,000	104,708,053	(1,099,211)							
<b>Total: 2016</b>		<b>\$ 543,391,328</b>	<b>\$ 214,203,438</b>	<b>\$ (536,401)</b>							
<b>2017</b>											
Apollo Investment Fund IX	Buyout	85,400,000	-	-							
Asia Alternatives Capital Partners V	Buyout	50,000,000	859,723	(3,048)							
CVC Capital Partners VII	Buyout	91,202,040	-	-							
GTCR Fund XII, L.P.	Buyout	32,500,000	-	-							
Horizon Impact Fund B	Buyout	100,000,000	7,891,545	-							
Insight Venture Partners X	Venture Capital	100,000,000	-	-							
Silver Lake Partners V	Buyout	78,000,000	-	-							
TDR Capital IV	Buyout	83,638,400	-	-							
Wind Point Partners VIII	Buyout	100,000,000	28,466,709	(1,115,949)							
<b>Total: 2017</b>		<b>\$ 720,740,440</b>	<b>\$ 37,217,977</b>	<b>\$ (1,118,997)</b>							
<b>Total: Commonwealth of Pennsylvania State Employees' Retirement System</b>		<b>\$ 17,124,630,445</b>	<b>\$ 14,747,222,388</b>	<b>\$ 20,644,036,766</b>							

(1) Contributions do not include management fees and fund expenses.

(2) IRR performance for investments held less than two years is not meaningful.

(3) Fund benchmark data provided by Burgiss Private IQ as of December 31, 2017, and represents sector-comparable funds aggregated by Vintage Year, Asset Class, and Geography, with Special Situations benchmarked to All Private Equity. Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

## Exhibit B – Investments by Sector

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Sector

As of December 31, 2017

Investment	Vintage	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(3)</sup>	Quartile Ranking (TVM)
<b>Buyout</b>											
ABRY Broadcast Partners III	1997	25,000,000	20,394,093	28,932,345							
ABRY Partners IV	2000	35,000,000	22,500,122	74,633,913							
ABRY Partners V	2004	45,000,000	36,658,306	83,011,659							
ABRY Partners VI	2008	50,000,000	55,005,441	106,026,972							
ABRY Partners VII	2011	30,000,000	34,239,156	46,975,522							
ABRY Partners VIII	2015	25,000,000	21,140,341	3,718,970							
ABS Capital Partners III	1999	35,000,000	27,764,683	18,757,336							
ABS Capital Partners IV	2000	35,000,000	28,789,304	68,287,633							
ABS Capital Partners V	2005	20,000,000	19,404,254	57,291,716							
ABS Capital Partners VI	2009	40,000,000	35,589,138	18,033,972							
Advent International GPE VI-A	2008	35,000,000	34,034,207	56,945,910							
Advent International GPE VII-B	2012	40,000,000	35,077,182	15,159,752							
Advent International GPE VIII-B	2016	50,000,000	21,143,691	-							
Advent Latin American Private Equity Fund IV	2007	30,000,000	29,810,236	37,625,921							
Advent Latin American Private Equity Fund V	2010	15,000,000	13,058,177	3,675,000							
Advent Latin American Private Equity Fund VI	2015	25,000,000	10,096,463	5,000,000							
Alpha Private Equity Fund 4	2002	26,508,000	35,605,050	77,986,040							
Alpha Private Equity Fund 5	2006	57,798,800	62,184,152	94,043,299							
APAX Capital Risque III (France)	1990	5,000,000	5,103,877	11,622,162							
APAX Europe IV	1999	32,424,000	29,909,800	40,876,051							
APAX Europe V	2000	53,262,000	68,764,274	150,017,403							
Apax Europe VI	2004	76,349,190	74,145,979	136,432,837							
Apax Europe VII	2007	132,170,235	132,639,474	153,110,673							
Apax Excelsior VI	2000	35,000,000	33,957,540	56,569,467							
Apollo Investment Fund IV	1997	75,000,000	72,079,063	124,814,033							
Apollo Investment Fund IX	2017	85,400,000	-	-							
Apollo Investment Fund V	2000	50,000,000	42,484,039	122,447,998							
Apollo Investment Fund VI	2005	40,000,000	38,289,202	54,741,007							
Asia Alternatives Capital Partners	2006	50,000,000	23,406,269	36,504,058							
Asia Alternatives Capital Partners II	2007	50,000,000	26,666,018	22,439,619							
Asia Alternatives Capital Partners III	2012	50,000,000	48,611,544	23,818,046							
Asia Alternatives Capital Partners V	2017	50,000,000	859,723	(3,048)							
Asia Alternatives Korea Buyout Investors (Hahn & Co)	2011	7,000,000	8,069,704	7,018,640							
Asa Pacific Growth Fund III	1999	15,000,000	14,627,000	16,708,736							
Audax Private Equity Fund	2000	35,000,000	33,157,787	55,936,816							
Audax Private Equity Fund II	2005	25,000,000	25,506,073	49,110,929							
Audax Private Equity Fund III	2007	37,000,000	39,579,527	75,365,366							
Audax Private Equity Fund V	2015	50,000,000	22,842,782	291,352							
Bain Capital Asia Fund	2007	12,000,000	11,020,944	16,105,376							
Bain Capital Europe III	2008	72,432,276	65,643,043	120,041,080							
Bain Capital Fund IX	2006	75,000,000	72,937,500	109,233,645							
Bain Capital Fund VII	2000	25,000,000	23,562,500	49,213,680							
Bain Capital Fund VIII-E	2004	12,144,000	12,299,670	19,631,405							
Bain Capital Fund X	2007	90,000,000	86,891,010	110,748,172							
Bain Capital IX Coinvestment Fund	2006	15,000,000	14,456,250	21,969,013							
Bain Capital X Coinvestment Fund	2007	5,000,000	1,225,000	1,200,987							
Baring India Private Equity Fund III Limited	2008	5,000,000	4,829,380	4,033,344							
Baring Vostok Private Equity Fund IV	2007	30,000,000	27,455,543	16,603,507							

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Sector

As of December 31, 2017

INVESTMENT	Vintage	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(4)</sup>	Quartile Ranking (TVM)
BC European Capital IX	2011	26,472,535	24,607,304	16,756,961							
BC European Capital VII	2000	32,658,500	37,740,202	96,576,440							
BC European Capital VII Top Up	2001	10,046,300	12,278,596	32,386,202							
BC European Capital VIII	2005	98,107,500	97,137,090	112,624,971							
Berkshire Fund VI	2002	20,000,000	17,260,685	45,989,363							
Berkshire Fund VII	2006	32,000,000	29,159,700	52,427,656							
Berkshire Fund VIII	2011	30,000,000	24,829,548	15,913,709							
Blackstone Capital II	1993	40,000,000	42,438,924	96,997,924							
Blackstone Capital III	1997	75,000,000	74,295,009	155,123,498							
Blackstone Capital IV	2001	75,000,000	67,778,433	184,703,538							
Blackstone Capital Partners V	2006	150,000,000	141,252,710	231,430,607							
Blackstone Capital Partners VII, L.P.	2015	50,000,000	9,880,241	688,644							
Blackstone Communications Partners I	2000	25,000,000	22,673,931	30,998,189							
Brait IV	2006	25,000,000	15,396,613	2,873,282							
Brentwood Buyout Fund	1988	12,500,000	12,548,440	21,955,297							
Brynwood Partners V	2005	10,000,000	9,646,565	18,911,882							
Brynwood Partners VI	2008	10,000,000	10,586,341	22,799,059							
Capvis Equity IV	2014	49,855,591	29,352,412	16,107,782							
Carlyle Energy Mezzanine Opportunities Fund	2012	50,000,000	54,836,013	20,267,685							
Charterhouse Capital Partners IX	2009	66,385,000	54,703,031	66,885,783							
Charterhouse Capital Partners VIII	2002	55,482,500	52,250,090	109,645,407							
Charterhouse Capital Partners VIII	2006	63,826,976	67,961,522	70,399,353							
Charterhouse Equity Partners II	1993	40,000,000	42,757,326	101,547,757							
Charterhouse Equity Partners III	1997	50,000,000	52,598,202	76,093,084							
Chequers Capital XV	2006	31,133,996	28,814,337	57,540,479							
Clayton Dubilier & Rice V	1995	50,000,000	49,236,502	58,935,059							
Clayton Dubilier & Rice VI	1998	50,000,000	33,699,959	57,841,145							
Clessidra Capital Partners II	2008	25,631,168	14,880,732	25,980,868							
Code Hennessy & Simmons	1989	10,000,000	9,650,000	29,464,414							
Code Hennessy & Simmons II	1994	20,000,000	20,000,000	69,888,354							
Code Hennessy & Simmons III	1997	40,000,000	38,423,990	56,951,057							
Code Hennessy & Simmons IV	1999	100,000,000	97,230,000	156,773,531							
Code Hennessy & Simmons V	2005	50,000,000	57,664,489	91,608,248							
CVC Capital Partners VIII	2017	91,202,040									
Denham Commodity Partners VI	2012	50,000,000	42,174,709	20,839,264							
DLJ Merchant Banking Fund II	1996	75,000,000	80,090,261	106,469,101							
DLJ Merchant Banking Fund III	2000	85,000,000	82,782,001	188,607,421							
Elevation Partners	2004	35,000,000	27,052,500	50,013,176							
Energy Spectrum Partners IV	2004	50,000,000	47,543,699	86,714,979							
Energy Spectrum Partners V	2007	30,000,000	24,389,673	51,487,729							
Eureka Growth Capital III	2013	20,000,000	9,977,250	10,514,420							
Eureka II	2006	20,000,000	16,769,862	17,101,126							
Excelsior Capital Asia Partners III	2007	25,000,000	19,930,971	12,628,664							
First Reserve Fund X	2004	30,000,000	29,215,285	54,728,700							
First Reserve Fund XI	2006	60,000,000	61,497,082	40,018,579							
First Reserve Fund XII	2008	50,000,000	50,127,154	25,337,322							
Francisco Partners	2000	50,000,000	46,730,605	61,464,903							
Francisco Partners II	2006	30,000,000	29,186,046	40,942,804							
Francisco Partners III	2011	20,000,000	18,597,313	25,498,536							

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Sector

As of December 31, 2017

Investment	Vintage	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(3)</sup>	Quantile Ranking (TVM)
Francisco Partners IV	2015	25,000,000	19,264,578	-	-	-	-	-	-	-	-
Frontenac VII	1997	40,000,000	40,000,000	55,957,155	-	-	-	-	-	-	-
FSN Capital IV L.P.	2013	46,049,703	35,124,589	20,112,791	-	-	-	-	-	-	-
FSN Capital V	2016	77,189,328	9,044,617	259,266	-	-	-	-	-	-	-
Great Hill Equity Partners	1999	30,000,000	27,858,676	31,339,243	-	-	-	-	-	-	-
Great Hill Equity Partners II	2000	35,000,000	33,224,137	78,337,666	-	-	-	-	-	-	-
Great Hill Equity Partners III	2006	35,000,000	31,191,528	41,373,122	-	-	-	-	-	-	-
Great Hill Equity Partners IV	2008	25,000,000	21,827,798	40,283,036	-	-	-	-	-	-	-
Gryphon Partners II	1999	35,000,000	32,173,416	41,953,023	-	-	-	-	-	-	-
Gryphon Partners III	2004	30,000,000	34,094,131	51,691,321	-	-	-	-	-	-	-
GTCR Fund XI, L.P.	2014	25,000,000	19,452,377	5,126,612	-	-	-	-	-	-	-
GTCR Fund XII, L.P.	2017	32,500,000	-	-	-	-	-	-	-	-	-
GTCR IX	2006	50,000,000	46,134,343	79,736,169	-	-	-	-	-	-	-
GTCR V	1997	11,400,000	11,400,000	20,777,730	-	-	-	-	-	-	-
GTCR VI	1998	50,000,000	49,520,987	44,453,905	-	-	-	-	-	-	-
GTCR VII	2000	55,000,000	47,987,500	121,876,298	-	-	-	-	-	-	-
GTCR VIII	2002	75,000,000	69,393,599	114,671,436	-	-	-	-	-	-	-
H.I.G. Brazil and Latin America Partners	2015	50,000,000	8,433,533	9,139	-	-	-	-	-	-	-
H.I.G. Europe Capital Partners II	2014	27,544,596	8,552,927	-	-	-	-	-	-	-	-
H.I.G. Growth Buyouts & Equity Fund II	2011	15,000,000	9,179,341	3,625,749	-	-	-	-	-	-	-
Hahn & Company II	2014	50,000,000	27,439,493	1,508,368	-	-	-	-	-	-	-
Halpern Denny Fund II	1997	25,000,000	24,999,991	5,307,874	-	-	-	-	-	-	-
Halpern Denny Fund III	2000	25,000,000	22,446,273	28,562,555	-	-	-	-	-	-	-
HarbourVest IPEP II	1997	25,000,000	24,500,000	34,075,106	-	-	-	-	-	-	-
HarbourVest IPEP III	1998	40,000,000	39,400,000	61,020,829	-	-	-	-	-	-	-
HarbourVest IPEP IV	2001	40,000,000	39,000,000	67,144,292	-	-	-	-	-	-	-
HarbourVest Partners VI	1999	200,000,000	196,000,000	239,789,338	-	-	-	-	-	-	-
HarbourVest Partners VII	2003	75,000,000	73,687,500	96,989,062	-	-	-	-	-	-	-
HarbourVest Partners VIII	2006	100,000,000	98,000,000	105,485,514	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners II	1991	21,130,323	23,218,222	39,807,943	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners III	1995	50,000,000	40,308,123	91,816,515	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners IV	1999	75,000,000	64,681,459	189,025,929	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners V	2004	80,000,000	70,568,846	191,936,442	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners VI	2006	125,000,000	112,971,649	196,686,138	-	-	-	-	-	-	-
Hellman & Friedman Capital Partners VIII	2015	50,000,000	21,782,304	3,528,945	-	-	-	-	-	-	-
HIPEP V-Asia Pacific & Rest of World	2005	30,000,000	28,200,000	32,034,370	-	-	-	-	-	-	-
Horizon Impact Fund	2014	50,000,000	28,435,644	5,944,190	-	-	-	-	-	-	-
Horizon Impact Fund B	2017	100,000,000	7,891,545	-	-	-	-	-	-	-	-
Horizon Strategic Fund - Carlyle Group	2014	100,000,000	85,630,658	16,934,926	-	-	-	-	-	-	-
Incline Equity Partners III	2013	15,000,000	14,657,440	13,008,388	-	-	-	-	-	-	-
InterMedia Partners VII	2005	15,000,000	14,749,398	16,403,677	-	-	-	-	-	-	-
Invemed Catalyst Fund	1999	25,000,000	13,695,639	11,020,176	-	-	-	-	-	-	-
J.H. Whitney Equity Fund III	1997	20,000,000	19,971,316	50,875,134	-	-	-	-	-	-	-
J.H. Whitney IV	1999	20,000,000	17,658,772	7,543,844	-	-	-	-	-	-	-
J.H. Whitney V	2000	20,000,000	22,559,318	44,904,355	-	-	-	-	-	-	-
J.H. Whitney VI	2005	50,000,000	46,555,172	41,989,295	-	-	-	-	-	-	-
J.H. Whitney VII	2010	25,000,000	20,806,196	29,754,045	-	-	-	-	-	-	-
J.W. Childs Equity Partners III	2002	40,000,000	38,233,446	76,553,620	-	-	-	-	-	-	-
JMI Equity Fund V	2005	24,000,000	21,891,327	123,293,390	-	-	-	-	-	-	-
JMI Equity Fund VI	2007	40,000,000	36,591,240	66,416,764	-	-	-	-	-	-	-

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JMI Equity Fund VII	2011	10,000,000	8,988,735	6,536,164							
JMI Equity Fund VIII	2015	25,000,000	12,434,720	2,758,153							
Kelso Investment Associates V	1993	40,000,000	53,807,706	153,659,812							
Kelso VI	1998	75,000,000	64,061,730	92,977,515							
Kelso VII	2003	40,000,000	38,453,157	65,700,625							
Kelso VIII	2007	150,000,000	127,406,578	121,228,686							
Leeds Equity Partners IV	2002	20,000,000	18,540,214	22,913,831							
Lime Rock Partners III	2004	15,000,000	13,833,501	7,379,936							
Lime Rock Partners IV	2006	25,000,000	23,650,060	19,382,889							
Lime Rock Partners V	2008	42,500,000	39,651,821	23,057,932							
Lime Rock Resources	2005	20,000,000	17,129,968	25,286,779							
LLR Equity Partners	1999	25,000,000	24,500,000	52,615,238							
LLR Equity Partners II	2004	25,000,000	25,000,000	42,098,368							
LLR Equity Partners III	2008	30,000,000	28,374,310	37,823,274							
LLR Equity Partners IV	2013	50,000,000	41,439,840	22,473,684							
Madison Dearborn Capital Partners	1993	15,000,000	14,449,521	49,149,700							
Madison Dearborn Capital Partners II	1997	40,000,000	39,472,443	93,274,048							
Madison Dearborn Capital Partners III	1999	75,000,000	74,852,182	114,509,416							
Madison Dearborn Capital Partners IV	2000	90,000,000	87,106,109	169,072,775							
Madison Dearborn Capital Partners V	2006	75,000,000	66,925,260	109,856,905							
Madison Dearborn Capital Partners VI	2008	50,000,000	45,436,601	73,821,469							
Media/Communication III	1996	25,000,000	23,593,750	38,175,382							
Media/Communications IV	1998	25,000,000	23,125,000	17,340,500							
Meridian Venture Partners II	2005	10,000,000	10,000,000	21,939,244							
Motion II B	2005	48,204,998	41,261,710	38,726,742							
New York Life Capital Partners III	2005	50,000,000	50,454,371	47,048,660							
New York Life Capital Partners IV	2008	50,000,000	49,547,519	89,563,679							
Newbridge Asia II	1999	15,000,000	14,756,943	14,567,191							
Newbridge Asia III	2000	15,000,000	12,743,920	55,728,660							
Newbridge Asia IV	2005	40,000,000	37,967,906	82,887,170							
NewSpring Growth Capital II	2006	10,000,000	8,757,900	13,962,639							
NewSpring Growth Capital III	2012	25,000,000	21,408,943	2,118,985							
Nordic Capital V	2002	34,996,500	42,214,176	132,407,045							
Nordic Capital VI	2005	54,369,000	59,249,208	95,554,157							
Nordic Capital VII	2007	92,519,165	88,584,871	76,725,833							
Oakhill Capital Partners	1999	50,000,000	50,156,830	93,999,577							
Oaktree Power Opportunities Fund III	2010	25,000,000	15,666,409	14,750,569							
OCM/GFI Power Opportunities Fund II	2005	25,000,000	13,110,559	41,644,215							
Palamon European Equity	1999	29,779,989	33,537,469	67,773,611							
Palamon European Equity II	2005	36,113,990	37,311,083	60,699,188							
Parthenon Investors II	2001	20,000,000	19,771,146	36,154,879							
Patriot Financial Partners	2008	25,000,000	25,000,000	49,139,381							
Penn Asia Investors	2012	133,000,000	65,077,398	21,590,297							
Permira European Fund	1997	33,494,536	32,159,947	84,442,672							
Permira European Fund II	2000	48,000,000	45,672,612	91,464,087							
Permira European Fund III	2003	115,960,000	123,774,404	217,778,356							
Permira IV	2006	127,779,198	123,910,382	188,554,409							
Permira VI	2016	56,202,000	11,727,041	-							
PNC Equity Partners II	2006	15,000,000	12,151,978	26,013,377							



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PNC Ventures	1985	5,000,000	5,000,000	12,055,375							
Primavera Capital Fund II	2015	50,000,000	41,650,378	1,253,994							
Providence Equity Partners IV	2000	25,000,000	21,894,740	56,040,748							
Providence Equity Partners V	2004	45,000,000	41,090,834	51,743,883							
Providence Equity Partners VI	2007	50,000,000	50,607,737	53,598,304							
Providence Strategic Growth II	2016	60,000,000	33,369,024	-							
Ridgemont Equity Partners II	2015	50,000,000	32,205,876	5,868,894							
Segulah IV	2008	16,705,647	14,633,586	16,931,191							
Sentinel Capital Partners V, L.P.	2014	10,000,000	6,577,884	2,759,408							
SFC Energy Partners I	2007	25,000,000	22,291,498	22,641,255							
SFC Energy Partners II	2011	25,000,000	20,006,418	2,222,349							
ShoreView Capital Partners	2003	38,000,000	26,859,811	56,043,792							
ShoreView Capital Partners II	2008	40,000,000	32,902,497	59,884,904							
Siguler Guff BRIC Opportunities Fund	2006	10,000,000	9,500,000	9,889,460							
Siguler Guff BRIC Opportunities Fund II	2007	25,000,000	24,500,000	15,660,527							
Silver Lake Partners V	2017	78,000,000	-	-							
Sterling Capital Partners I	2002	15,000,000	14,146,729	30,923,365							
Sterling Capital Partners II	2005	30,000,000	27,224,698	27,662,225							
Sterling Capital Partners III	2007	32,000,000	29,792,891	30,703,208							
Sterling Group Partners IV, L.P.	2015	20,000,000	6,319,097	342,813							
Summit IV	1995	25,000,000	24,000,000	183,497,742							
Summit Partners Private Equity Fund VII	2005	97,134,500	97,134,505	144,101,041							
Summit V	1998	37,500,000	36,187,500	50,154,672							
Summit Ventures VI	2001	62,000,000	62,000,000	134,008,940							
TA IX	2000	45,000,000	43,650,000	105,863,474							
TA X	2006	70,000,000	67,550,000	89,682,009							
TA/Advent VII	1993	25,000,000	25,000,000	96,585,496							
TA/Advent VIII	1997	30,000,000	29,400,000	67,141,158							
TDR Capital IV	2017	83,638,400	-	-							
Thomas H. Lee Equity Fund IV	1998	70,000,000	60,512,410	52,506,686							
Thomas H. Lee Equity Fund V	2000	100,000,000	97,772,983	175,615,745							
Thomas H. Lee Equity Fund VI	2006	50,000,000	49,535,152	58,563,023							
TPG Asia V	2007	22,500,000	19,733,774	20,857,655							
TPG Partners II	1997	75,000,000	71,335,785	127,821,079							
TPG Partners III	1999	75,000,000	61,238,756	165,990,273							
TPG Partners IV	2003	30,000,000	27,502,731	56,961,132							
TPG Partners V	2006	93,375,730	89,664,515	108,225,531							
TPG Partners VI	2008	44,294,641	46,395,784	52,099,942							
UMS Partners Fund I	2004	5,000,000	5,000,000	3,004,752							
Vestar Capital Partners III	1996	25,000,000	22,288,809	27,746,687							
Vestar Capital Partners IV	1999	100,000,000	90,331,274	172,389,522							
Vestar Capital Partners V	2005	50,000,000	48,164,752	55,984,593							
Vista Equity Partners Fund VI	2016	150,000,000	104,708,053	(1,099,213)							
Weston Presidio II	1995	20,000,000	17,000,000	41,383,116							
Weston Presidio III	1998	35,000,000	31,989,586	36,514,452							
Weston Presidio IV	2000	35,000,000	34,451,015	40,323,109							
Weston Presidio V	2005	50,000,000	43,269,290	109,759,888							
Wind Point Partners VIII	2017	100,000,000	28,466,709	(1,115,949)							
Yucarpa American Alliance Fund II	2008	25,000,000	26,820,365	15,650,108							
<b>Total/Buyout</b>		<b>\$ 10,887,670,851</b>	<b>\$ 9,168,422,289</b>	<b>\$ 13,708,784,865</b>							

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<b>Venture Capital</b>											
ABACUS Fund Partners	2000	15,000,000	15,000,000	8,949,405							
Abingworth Bioventures V	2007	33,775,000	26,704,656	37,604,294							
Abingworth Bioventures IV	2003	20,000,000	19,700,000	23,712,133							
Accel Europe	2001	15,000,000	11,350,000	18,110,053							
Adams Capital Management II	1999	30,000,000	30,000,000	4,117,043							
Adams Capital Management III	2000	30,000,000	30,000,000	7,536,905							
Advanced Technology Ventures VI	2000	10,000,000	10,000,000	4,498,689							
Advanced Technology Ventures VII	2001	27,000,000	26,797,500	29,080,722							
Alloy Annex I	2003	5,000,000	5,000,000	1,958,747							
Alloy Ventures 2000	2000	20,000,000	20,000,000	5,964,401							
Alloy Ventures 2002	2002	25,000,000	24,832,999	15,448,474							
Alloy Ventures 2005	2005	25,000,000	25,000,000	16,519,861							
APA Fostin	1987	20,000,000	20,000,000	77,278,523							
APAX Germany	1990	5,200,000	5,246,602	12,685,354							
APAX Germany II	1997	8,737,262	8,455,477	17,367,331							
APAX UK Ventures VI	1997	6,918,899	6,918,899	13,274,906							
APEX Investment Fund IV	1999	25,000,000	25,000,000	5,661,882							
APEX Investment Fund V	2001	20,000,000	20,122,702	7,739,736							
Artiman Ventures II	2006	25,000,000	20,967,427	13,141,575							
Artiman Ventures III	2010	20,000,000	18,910,000	-							
Atlas Venture Fund IV	1999	26,000,000	21,630,650	8,556,942							
Atlas Venture Fund V	2000	37,200,000	34,699,263	40,751,899							
Atlas Venture Fund VI	2001	24,800,000	23,283,720	16,780,941							
Austin Ventures IX	2005	15,000,000	15,127,754	16,798,717							
Austin Ventures VIII	2001	20,932,140	20,932,140	33,669,094							
Bachow Investments III	1994	25,000,000	24,969,997	26,202,538							
Battery Ventures VIII Side Car Fund	2008	9,000,000	6,768,000	17,412,210							
Battery Ventures VIII, L.P.	2007	25,000,000	25,000,000	44,528,658							
Birchmere Ventures III	2005	10,000,000	9,082,885	8,692,184							
Care Capital Investments III	2006	25,000,000	19,990,191	11,823,694							
CEO Ventures II	1989	7,500,000	7,483,903	5,275,003							
CEO Ventures 5	1987	8,000,000	982,003	1,239,189							
Charles River Partnership XI	2000	11,032,259	11,032,259	14,422,548							
CID Greater China Venture Capital Fund II	2007	20,000,000	15,642,417	24,179,486							
Clearstone Venture Partners III-A	2004	25,000,000	24,250,000	12,828,843							
Cross Atlantic Technology Fund	1999	20,000,000	19,965,000	23,742,240							
Cross Atlantic Technology Fund II	2001	32,900,000	31,815,285	33,589,061							
Devon Park Bioventures	2006	10,842,697	8,417,877	25,366,934							
Draper Fisher Jurvetson Fund VI	1999	8,000,000	8,000,000	5,347,835							
Draper Fisher Jurvetson Fund VII	2000	20,000,000	20,000,000	9,781,991							
Draper Triangle Ventures	1999	20,000,000	16,394,757	11,923,531							
Draper Triangle Ventures II	2004	12,000,000	11,490,032	13,724,504							
Draper Triangle Ventures III, LP	2015	10,000,000	5,294,967	92,073							
Edison Venture Fund III	1994	25,000,000	25,000,000	48,625,410							
Fairview Capital	1994	10,000,000	10,000,000	4,672,939							
Fairview II	1997	10,000,000	9,869,194	4,074,860							
Fostin Capital	1985	10,000,000	10,000,000	10,535,024							
Fostin Capital II	1989	8,000,000	7,500,000	11,613,178							

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Frazier Healthcare III	1999	30,000,000	30,000,000	13,051,758							
Frazier Healthcare IV	2001	30,000,000	28,257,985	24,821,191							
Frazier Healthcare V	2005	30,000,000	27,629,471	46,754,238							
Grotech PA III	1990	3,000,000	3,000,000	2,910,452							
Grotech Partners IV	1993	25,000,000	25,000,000	44,252,767							
Grotech Partners V	1998	25,000,000	25,000,000	24,590,624							
Guggenheim Technology Ventures I	2008	2,000,000	2,000,000	631,544							
Healthcare Ventures III	1992	15,000,000	15,000,000	31,477,743							
Healthcare Ventures V	1997	25,000,000	25,000,000	54,330,986							
Healthcare Ventures VI	2000	35,000,000	35,000,000	6,534,943							
Healthcare Ventures VII	2002	35,000,000	35,000,000	22,026,107							
Healthcare Ventures VIII	2005	30,000,000	29,775,000	23,683,732							
Highland Capital Partners VI	2001	25,000,000	25,000,000	37,031,136							
Highland Capital Partners VII	2006	35,000,000	35,000,000	28,655,565							
Highland Consumer Fund I	2007	25,000,000	25,000,000	10,984,976							
Insight Venture Partners IX	2015	50,000,000	39,870,605	1,339,968							
Insight Venture Partners VI	2007	30,000,000	28,895,502	69,400,628							
Insight Venture Partners VII	2011	20,000,000	19,681,600	16,529,693							
Insight Venture Partners VIII	2013	50,000,000	46,424,000	14,984,276							
Insight Venture Partners X	2017	100,000,000	-	-							
InterWest Partners IX	2004	20,000,000	19,430,000	21,478,462							
InterWest Partners VIII	2000	25,000,000	24,850,000	12,953,647							
InterWest Partners X	2008	30,000,000	25,894,500	2,300,138							
IVP II	2001	8,600,000	8,564,472	3,576,595							
IVP III	2004	10,500,000	9,555,000	13,116,820							
IVP IV	2007	14,000,000	13,300,000	13,996,728							
JP Morgan Venture Capital Investors	1998	100,000,000	93,284,186	70,917,967							
JP Morgan Venture Capital Investors II	2000	100,000,000	98,029,678	120,867,109							
JP Morgan Venture Capital Investors III	2005	100,000,000	99,249,283	87,880,853							
Keystone V	1997	25,000,000	25,000,000	2,320,252							
Keystone Venture IV	1993	15,000,000	14,980,880	11,417,691							
Keystone Ventures II	1985	10,000,000	10,000,000	22,401,982							
Kline Hawkes Pacific	2000	15,000,000	15,000,000	7,024,260							
Knightsbridge Venture Capital VI	2004	20,000,000	18,266,667	15,207,280							
Lightspeed India Partners I	2015	15,000,000	8,031,750	-							
Lightspeed Venture Partners VII	2005	18,000,000	15,320,168	33,163,896							
Lightspeed Venture Partners VIII	2008	15,000,000	12,661,838	19,296,708							
Media/Communications Ventures Fund V	2000	35,000,000	33,781,095	56,014,639							
Meritech Capital Partners II	2000	26,475,166	24,842,529	37,926,932							
Meritech Capital Partners III	2006	35,000,000	35,000,000	182,317,506							
Meritech Capital Partners IV	2011	20,000,000	19,100,000	12,532,808							
Meritech Capital Partners V	2014	23,000,000	17,537,500	-							
Mid-Atlantic Venture Fund III	1997	20,000,308	20,000,000	5,654,702							
Mid-Atlantic Venture Fund IV	2000	30,000,000	30,000,000	9,177,849							
Morgenthaler Partners IX	2008	20,000,000	20,000,000	31,155,428							
Morgenthaler Partners VII	2001	35,000,000	35,000,000	30,543,944							
Morgenthaler Partners VIII	2005	35,000,000	35,046,903	46,591,525							
Murphy & Fauver	1988	5,200,000	5,194,735	7,862,758							
NEPA Venture	1985	2,000,000	2,000,000	12,132,452							
NEPA Venture-II	1992	7,500,000	7,500,000	34,879,769							

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New Enterprise Associates 11	2003	25,000,000	25,000,000	57,197,124							
New Enterprise Associates 12	2006	35,000,000	35,626,297	41,560,673							
New Enterprise Associates IX	1999	20,000,000	19,600,000	7,721,519							
New Enterprise Associates VI	1993	25,000,000	25,000,000	200,811,085							
New Enterprise Associates VII	1996	30,000,000	30,000,000	102,798,917							
New Enterprise Associates X	2000	35,000,000	35,000,000	32,493,542							
Novitas Capital III	2003	10,000,000	8,337,867	3,924,047							
Novo Vita	2000	11,616,498	11,328,462	5,382,912							
Oak Investment Partners XI	2004	35,000,000	35,000,000	21,790,624							
Oak Investment Partners XII	2006	40,000,000	39,214,554	28,177,778							
P/A Fund I	1993	30,000,000	30,000,000	66,835,378							
P/A Fund III	1997	100,000,000	99,366,750	161,607,393							
Permira UK Venture Fund III	1990	9,063,438	8,946,988	26,295,739							
Permira UK Venture Fund IV	1996	15,248,000	15,794,739	23,596,190							
Pitango Venture Capital Fund IV	2004	20,000,000	20,266,266	16,748,067							
Pitango Venture Capital Fund V	2007	30,000,000	27,917,626	16,866,840							
Pittsburgh Seed Fund	1985	2,000,000	2,000,000	1,016,649							
Pont Ventures II	1990	1,000,000	1,000,000	1,313,407							
Polaris Venture Partners	1996	15,000,000	14,520,000	46,594,679							
Polaris Venture Partners II	1998	25,000,000	24,750,000	40,761,283							
Polaris Venture Partners III	2000	50,000,000	49,500,000	35,229,712							
Polaris Venture Partners IV	2001	50,000,000	49,750,000	47,129,701							
Polaris Venture Partners V	2006	50,000,000	49,000,000	42,128,792							
Quaker BioVentures	2003	20,000,000	19,757,627	5,472,501							
Quaker BioVentures III	2007	25,000,000	22,474,297	17,040,348							
RR & Z PA Fund #1	1988	10,000,000	10,000,000	19,606,155							
RRZ Private Equity	1996	20,000,000	19,144,687	12,188,287							
SCP Private Equity Partners II	2000	25,000,000	23,026,869	8,534,307							
Sofinnova Venture Partners VII	2006	20,000,000	19,204,944	29,241,579							
Sprout VII	1995	18,000,000	18,000,000	48,331,682							
Summit Accelerator Fund	1999	8,000,000	7,560,000	13,302,985							
Summit Partners Venture Capital Fund II	2005	15,000,000	15,000,000	31,578,683							
TDH II	1985	9,000,000	9,000,000	15,990,106							
Three Arch Capital	2000	20,000,000	19,500,000	16,548,697							
Three Arch Partners IV	2003	20,000,000	19,050,000	20,764,485							
TL Ventures III	1996	15,000,000	15,000,000	20,773,654							
TL Ventures IV	1999	35,000,000	35,000,000	26,908,029							
TL Ventures V	2000	40,000,000	40,000,000	16,218,967							
US Venture Partners VIII	1999	13,750,000	13,750,000	5,057,779							
US Venture Partners VIII	2000	26,250,000	26,830,000	32,982,728							
Weathergag Venture Capital	2007	25,000,000	22,875,000	23,231,174							
Weathergag Venture Capital III	2010	25,000,000	28,814,064	6,596,430							
Worldview Technology Partners IV	1980	18,130,023	16,951,175	7,863,559							
Zero Stage II	1980	2,000,000	2,000,000	628,401							
<b>Total Venture Capital</b>		<b>\$ 3,402,179,690</b>	<b>\$ 3,162,442,115</b>	<b>\$ 3,612,445,975</b>							

Commonwealth of Pennsylvania State Employees' Retirement System

Schedule of Private Equity Investments by Sector  
As of December 31, 2017

Investment	Vintage	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile IRR <sup>(3)</sup>	Upper Quartile TVM <sup>(3)</sup>	Quartile Ranking (TVM)
<b>Special Situations</b>											
ABRY Advanced Securities Fund	2007	25,000,000	20,239,583	38,682,209							
ABRY Mezzanine Partners	2001	30,000,000	24,857,300	49,707,116							
ABRY Senior Equity II	2006	30,000,000	25,405,779	41,684,849							
ADV Opportunities Fund I, L.P.	2015	50,000,000	36,212,977	4,535,978							
AG Capital Recovery Partners II	2001	17,600,000	17,600,000	27,534,983							
AG Capital Recovery Partners III	2002	20,000,000	16,000,000	25,183,359							
AG Capital Recovery Partners IV	2003	50,000,000	35,415,216	55,993,470							
AG Capital Recovery Partners V	2005	20,000,000	20,000,000	22,293,130							
ASF VII B LP	2016	100,000,000	21,200,023	303,544							
ASF VII PA Co-Invest	2016	50,000,000	13,010,989	-							
Avenue Asia Special Situations Fund IV	2006	50,000,000	31,897,973	34,199,724							
Avenue Europe Special Situations Fund	2008	38,632,500	25,306,863	37,899,419							
Avenue Special Situations Fund III	2002	50,000,000	37,387,969	62,628,424							
Avenue Special Situations Fund IV	2005	50,000,000	49,911,855	69,301,932							
Avenue Special Situations Fund V	2007	70,000,000	69,901,575	92,786,535							
Avenue Special Situations Fund VI	2010	20,000,000	19,977,798	19,360,285							
AXA Secondary Fund III	2004	26,000,000	21,733,291	37,244,706							
AXA Secondary Fund III-2	2004	14,000,000	11,677,210	19,062,764							
AXA Secondary Fund IV	2006	80,000,000	66,908,452	97,663,182							
AXA Secondary Fund V B	2012	75,000,000	57,982,442	81,416,021							
B III Capital Partners	1996	35,000,000	34,423,917	50,540,547							
Centerbridge Capital Partners I	2006	50,000,000	51,804,352	107,910,945							
Centerbridge Capital Partners III	2015	30,000,000	12,816,000	1,831,013							
Cerberus Institutional Partners	1999	35,000,000	35,000,000	79,906,454							
Cerberus Institutional Partners Series Four	2006	75,000,000	68,695,715	105,114,187							
Cerberus Institutional Partners Series Three	2003	35,000,000	22,321,354	48,807,137							
Cerberus Institutional Partners Series Two	2001	35,000,000	30,100,793	93,677,958							
Clearlake Capital Partners IV, L.P.	2015	15,000,000	12,016,427	8,467,662							
CVI Global Value Fund	2007	60,000,000	57,000,000	82,038,032							
Dover Street VII	2007	30,000,000	28,675,841	35,714,799							
H.I.G. Bayside Debt & LBO Fund II	2008	30,000,000	30,124,197	30,394,043							
H.I.G. Bayside Loan Opp Fund III	2013	50,000,000	40,392,203	12,772,504							
H.I.G. Bayside Loan Opp Fund IV	2015	25,000,000	9,442,545	5,055,089							
JP Morgan US Corp Finance Investors II	2002	50,000,000	47,843,124	84,808,665							
KPS Special Situations Fund IV	2014	25,000,000	9,821,339	5,396,135							
Landmark Equity IV	1994	14,923,291	12,495,850	18,815,175							
Landmark Equity Partners V	1995	19,624,113	19,391,580	23,842,709							
LBC Credit Partners III	2013	50,000,000	47,500,000	36,820,288							
Lexington Capital Partners II	1998	40,000,000	39,538,000	52,625,424							
Lexington Capital Partners III	1999	35,000,000	34,516,449	43,363,378							
Lexington Capital Partners V	2001	75,000,000	74,322,207	122,372,999							
Lexington Capital Partners VI	2005	50,000,000	52,232,143	65,130,627							
Mathm Patterson Global Opportunities Partners	2001	35,000,000	30,007,727	56,715,164							
Mathm Patterson Global Opportunities Partners II	2004	30,000,000	29,962,912	10,578,309							
Oaktree Capital Management	2004	40,000,000	39,999,995	123,404,426							
Oaktree Opportunities Fund IX	2013	50,000,000	50,000,000	16,447,715							
OCM Opportunities Fund	1995	24,000,000	24,000,000	39,330,886							
OCM Opportunities Fund II	1997	40,000,000	40,000,000	60,366,957							
OCM Opportunities Fund III	2000	60,000,000	60,000,000	90,237,385							
OCM Opportunities Fund IV	2001	70,000,000	70,000,000	115,665,253							
OCM Opportunities Fund V	2004	40,000,000	40,000,000	65,205,010							

**Commonwealth of Pennsylvania State Employees' Retirement System**

Schedule of Private Equity Investments by Sector  
As of December 31, 2017

Investment	Vintage	Commitments	Contributions <sup>(1)</sup>	Distributions	Market Value	Unrealized Gain/(Loss)	IRR <sup>(2)</sup>	TVM	Upper Quartile <sup>(3)</sup>	Upper Quartile <sup>(3)</sup>	Quartile Ranking
OCM Opportunities Fund VI	2005	40,000,000	40,000,000	63,171,009							
OCM Opportunities Fund VII	2007	40,000,000	40,000,000	51,627,682							
OCM Opportunities Fund VII b	2007	40,000,000	36,000,000	59,351,957							
OCM Opportunities Fund VIII	2010	12,500,000	12,500,000	15,583,643							
OCM Opportunities Fund VIII b	2010	12,500,000	12,500,000	9,108,936							
OCM Principal Opportunities	1996	25,000,000	25,000,000	36,286,472							
OCM Principal Opportunities Fund IV	2006	20,000,000	20,400,000	32,981,361							
OCM Principal Opportunities II	2001	25,000,000	25,000,000	43,942,453							
Platinum Equity Capital Partners III, L.P.	2013	50,000,000	42,488,910	45,753,416							
RRJ Capital Master Fund III	2015	50,000,000	18,011,410	1,525,850							
Sankaty Credit Opportunities III	2007	50,000,000	50,000,000	52,691,136							
Sankaty Credit Opportunities IV	2008	40,000,000	38,000,000	50,874,351							
TCW Special Credits V	1994	35,000,000	35,000,000	60,857,854							
Templeton Strategic Emerging Markets Fund II	2005	100,000,000	74,742,190	149,972,520							
Templeton Strategic Emerging Markets Fund III	2008	100,000,000	92,498,137	60,966,332							
Versa Capital Partners	2004	20,000,000	22,868,000	15,988,714							
Versa Capital Partners II	2008	15,000,000	15,943,385	6,617,313							
W Capital Partners II	2007	40,000,000	38,333,987	52,066,422							
Total: Special Situations		\$ 2,834,779,904	\$ 2,416,357,984	\$ 3,322,805,926							
<b>Total: Commonwealth of Pennsylvania State Employees' Retirement System</b>		<b>\$ 17,124,630,445</b>	<b>\$ 14,747,222,388</b>	<b>\$ 20,644,036,766</b>							

(1) Contributions do not include management fees and fund expenses.

(2) IRR performance for investments held less than two years is not meaningful.

(3) Fund benchmark data provided by Burgiss Private IQ as of December 31, 2017, and represents sector-comparable funds aggregated by Vintage Year, Asset Class, and Geography, with Special Situations benchmarked to All Private Equity. Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

**Pages 44 to 50 - Redacted**