

SEMI-ANNUAL PERFORMANCE REPORT

California Public Employees' Retirement System

Private Equity Program

Semi-Annual Report – June 30, 2018



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Introduction and Executive Summary

Overview

This report provides a review of CalPERS Private Equity Program as of June 30, 2018, and includes a review and outlook for the Private Equity industry. CalPERS began investing in the Private Equity asset class in 1990. CalPERS currently has an 8% Policy Target allocation to the Private Equity asset class. The total value of the portfolio was \$27.2 billion¹, with total exposure (net asset value plus unfunded commitments) of \$41.3 billion². The Private Equity Portfolio represented 7.7% of CalPERS total assets as of June 30, 2018.

Executive Summary

Portfolio

- The Portfolio is diversified by strategy, with Buyouts representing the largest exposure at 64% of total Private Equity net asset value.
 - Mega and Large buyout funds represent approximately 55% of CalPERS' Buyouts exposure.
- By net asset value (NAV), assets within the United States comprise approximately 60% of the Program's investments.
- The commitments made to the 2005 – 2008 vintages represent 45% of CalPERS' total private equity commitments.
- Fund investments represent 72% of exposure, with the balance in Customized Investment Accounts (14%), Fund of Funds (8%), and Co-Investments/Direct Investments (6%).

¹ Source: State Street cash-flow adjusted NAVs, as of 6/30/2018. Total exposure is the sum of NAVs and unfunded commitments.

² Source: State Street, CalPERS.

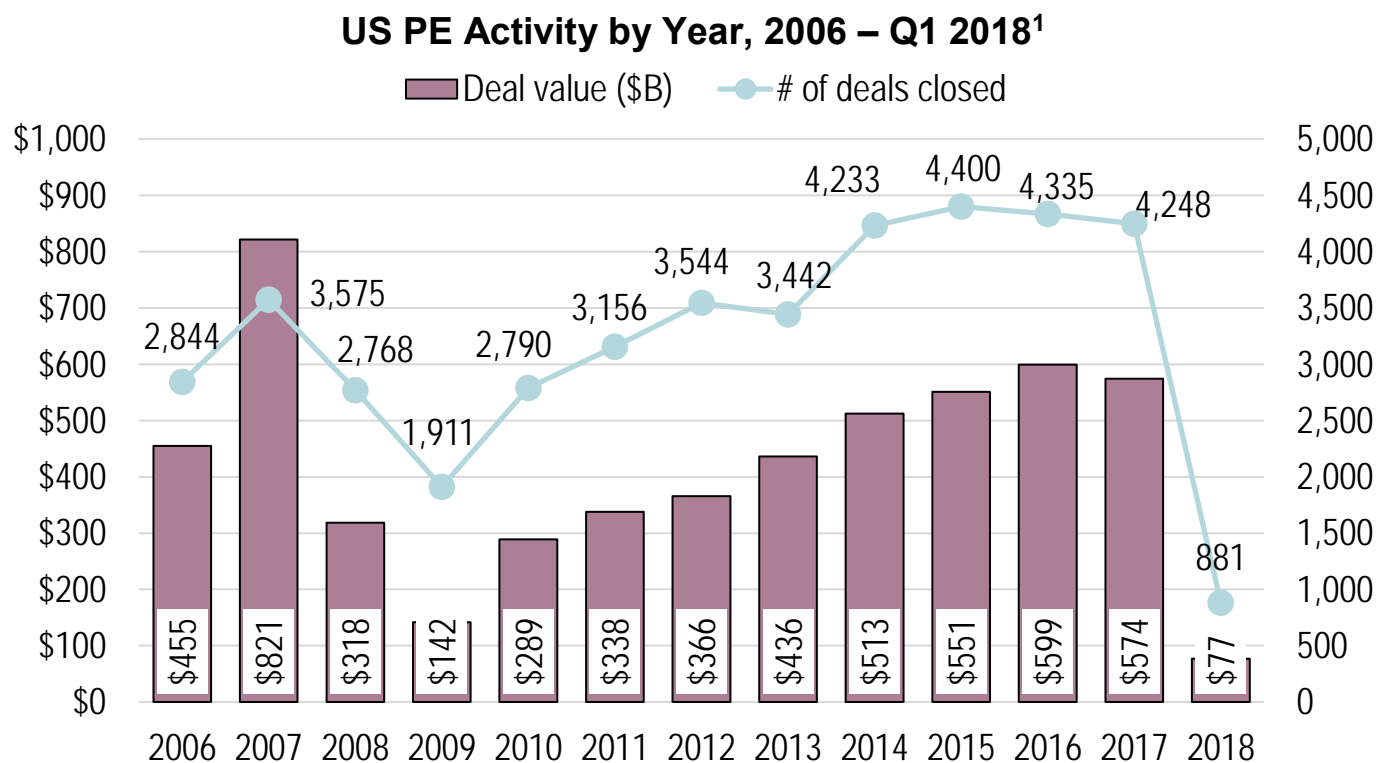
Performance

- The Program reported a value increase of \$1.6 billion from January 1, 2018 to June 30, 2018.
- The Private Equity Program has underperformed its policy benchmark across trailing periods of ten years or less.
 - The Program has matched or exceeded FTSE All World Index plus 150 basis points in the 3-, 5-, and 10-year periods.

Activity

- The Private Equity Program experienced a net positive cash flow of \$1.2 billion through the first half of 2018.
- For the first half of 2018, Staff completed ten commitments totaling \$2.7 billion.
- Since 2011 CalPERS has received nearly \$31 billion in net cash flow from the Private Equity Portfolio.

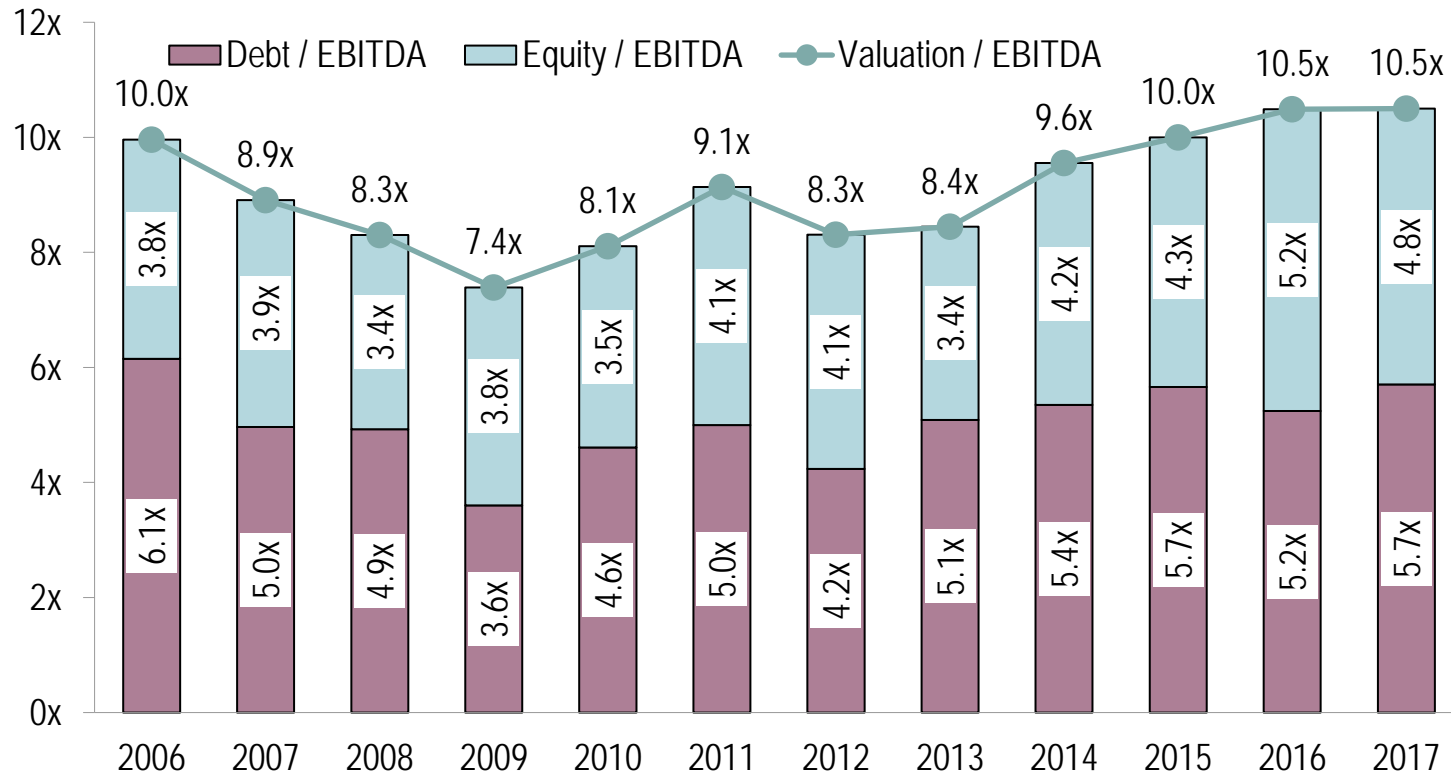
Private Equity Industry Review



- U.S. buyout investment activity remained stable through 2017, but weakened in the first quarter of 2018. Deal value was at \$574 billion at the close of 2017, compared to \$600 billion for 2016. First quarter 2018 showed deal value at \$77 billion, representing a 33% decrease over first quarter 2017 deal value.
- Deal flow is expected to tick back up, however, partly due to an estimated \$94 billion in deal value that has been announced but not yet closed for 2018.

¹ Source: Pitchbook.

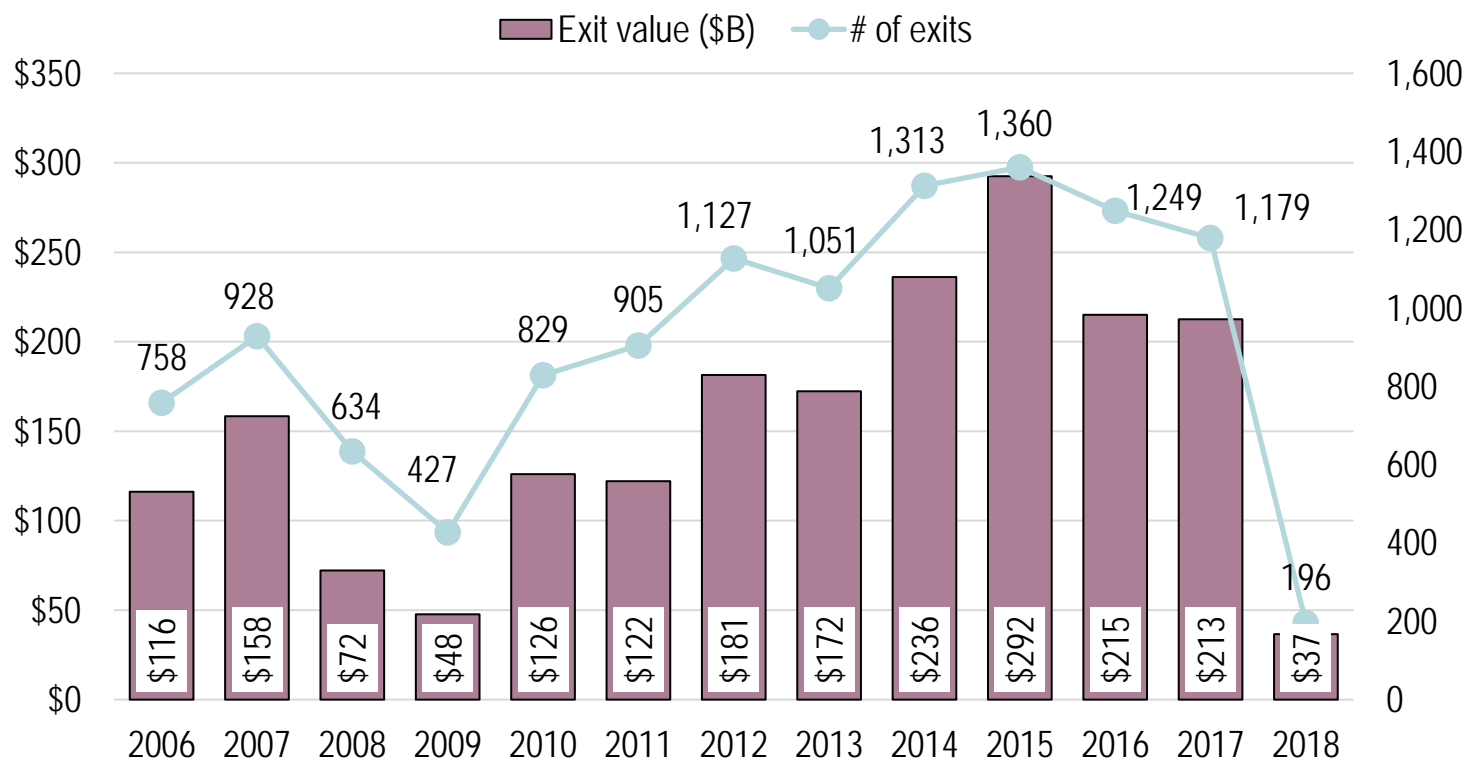
US M&A Transaction Multiples, 2010 – Q4 2017¹



- For 2017, average transaction valuation has been steady compared to 2016, but remains at peak levels.
- The average leverage multiple has nearly reached 6 times trailing EBITDA, the highest since 2006.

¹ Source: Pitchbook.

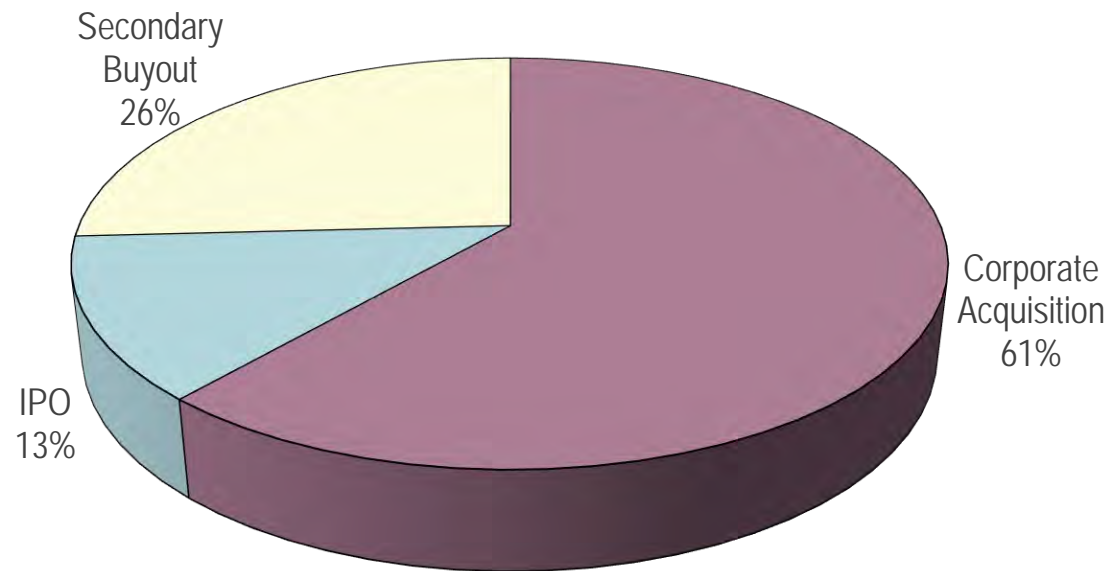
US PE-backed Exit Activity, 2006 – Q1 2018¹



- Following the slow-down in 2016, exit activity remained constant in 2017 in both dollar value and number of exits.
- Exit activity slowed in the first quarter of 2018, with \$37 billion in exit value.

¹ Source: Pitchbook.

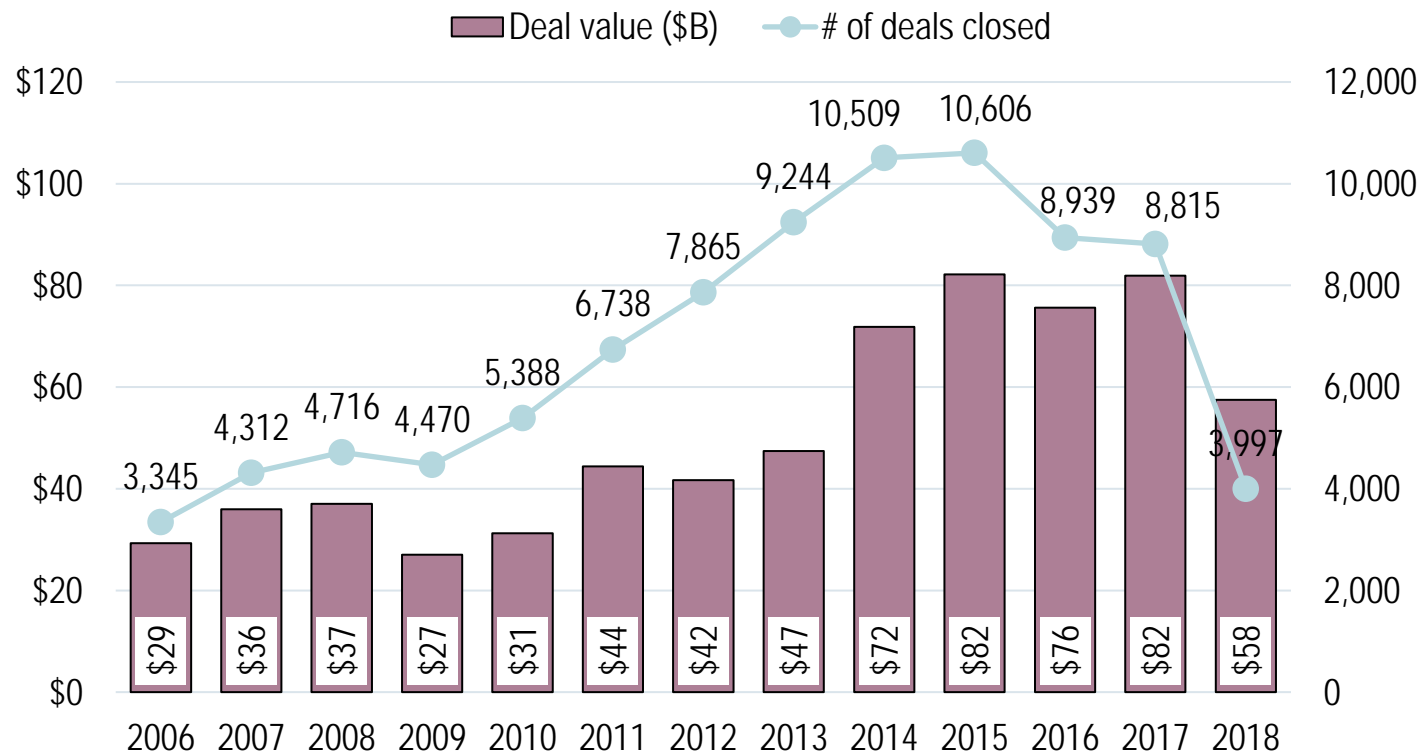
US PE-backed Exits (\$ Value), Q1 2018¹



- From 2010 through the end of 2017, secondary buyouts (i.e., sales to other private equity funds) have continued to account for a growing share of exits, representing 46% in 2017. However, first quarter 2018 saw a drop in secondary buyouts, representing only 26% of total exit value.
- IPOs were a relatively popular exit route during the first quarter 2018 at 13% of exit value. While IPOs are typically the exit route for larger companies, half of the PE-backed IPOs during the first quarter 2018 were companies with valuations less than \$1 billion.

¹ Source: Pitchbook. Based on first quarter of 2018.

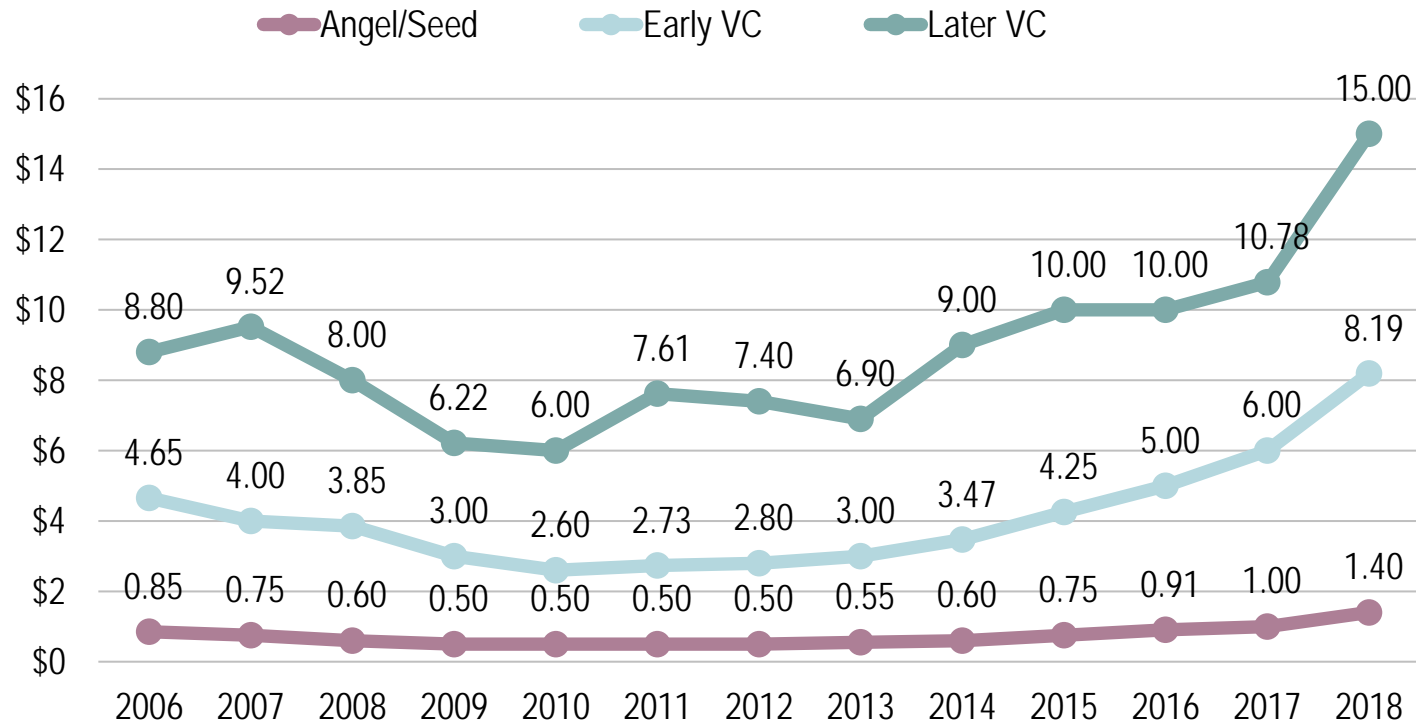
US VC Activity by Year, 2006 – Q2 2018¹



- The aggregate value of U.S. venture investment achieved an all-time high in 2017, though the number of venture deals closed have steadily been decreasing. The first half of 2018 shows a continuation of this trend with \$58 billion invested in U.S. venture.
- Investments in “unicorns,” or firms valued greater than \$1 billion, represented over 20% of all U.S. venture capital raised in 2017 and the first half of 2018.

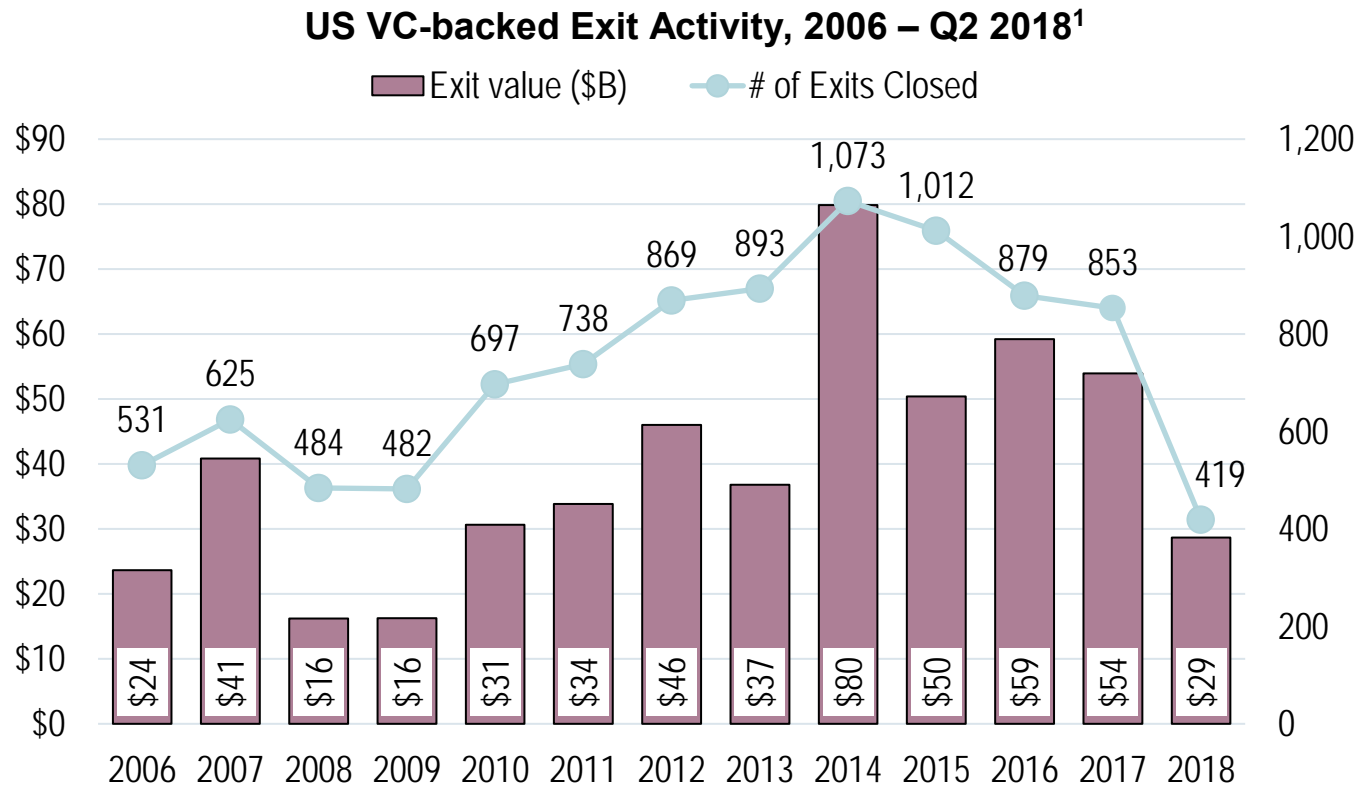
¹ Source: Pitchbook.

Median VC Round Size (\$mm), 2006 – Q2 2018¹



- Median round sizes for U.S. venture transactions continue to rise with Angel, Early, and Late stage round size all increasing in 2018. Median venture round sizes in the first half of 2018 were two to three times 2010 levels.
- Across all stages, median pre-money valuations increased significantly during the first half of 2018 with angel/seed valuations up 17% from 2017 and later stage valuations up 25%-45%.

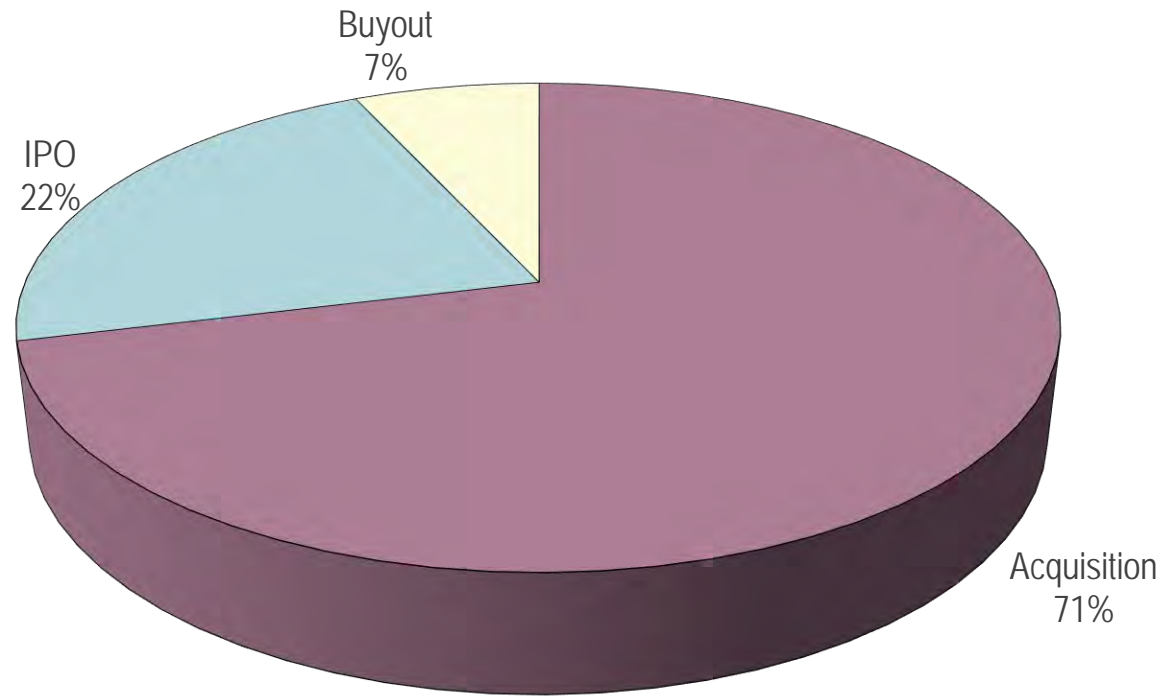
¹ Source: Pitchbook.



- The value of venture capital exits has slowly been trending up since its significant drop in 2015, ending 2017 at \$54 billion. The steady increase has continued in to the first half of 2018 with \$29 billion in exit value.
- The number of venture capital exits continued its downward trend in the first half of 2018; however, the average exit size has increased in the last several years.

¹ Source: Pitchbook.

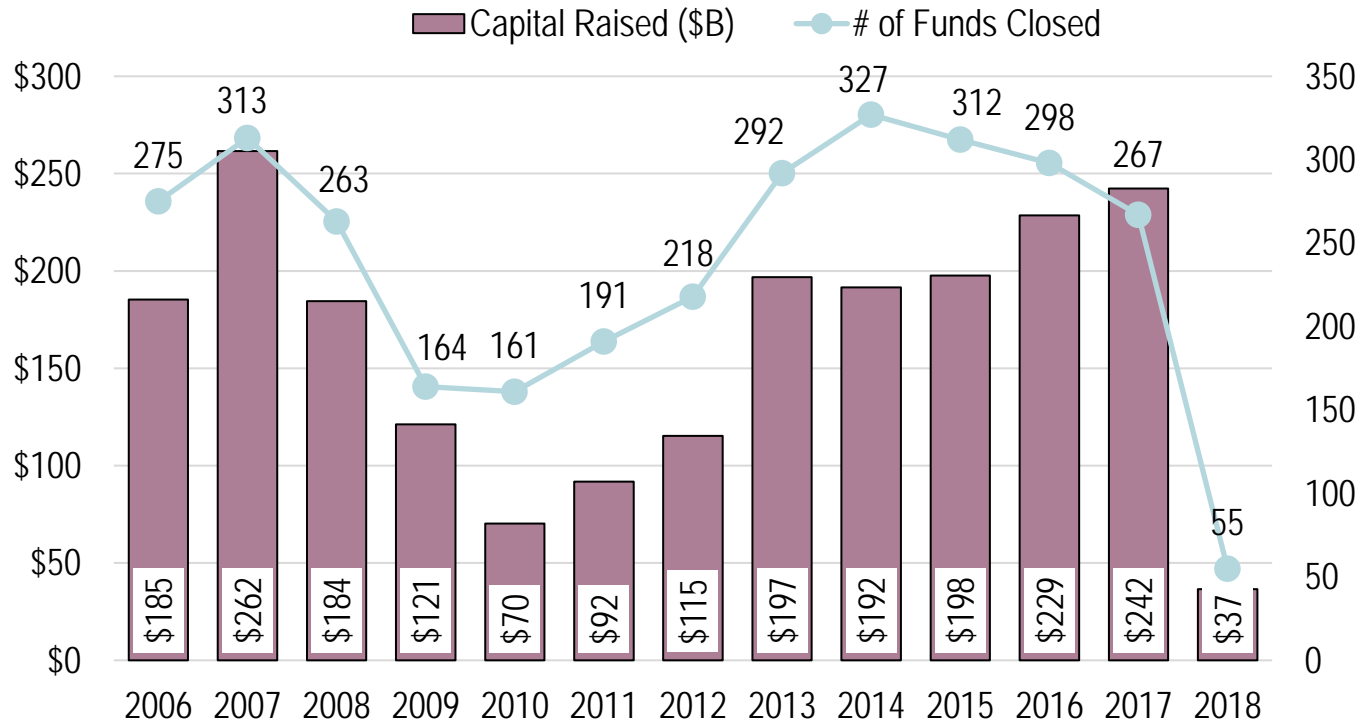
US VC-backed Exits (\$ Value), Q2 2018¹



- Acquisitions (e.g., strategic buyer) continue to make up the bulk of VC-backed exits by value, although buyout (e.g., to a financial buyer) has become a more common exit strategy in recent years.
- IPO exits continued to increase through the first half of 2018, but remain a small percentage of total venture-backed exits.

¹ Source: Pitchbook.

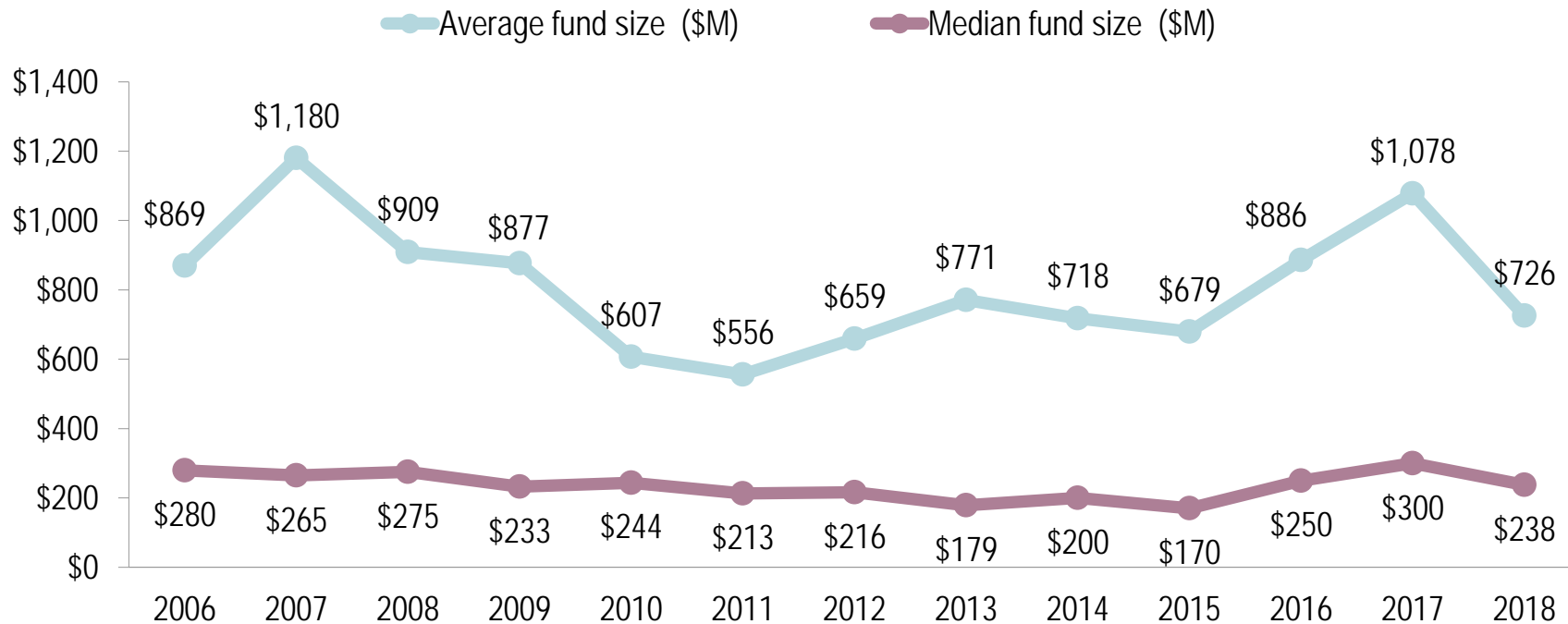
US PE Fundraising, 2006 – Q1 2018¹



- Calendar year 2017 was the strongest fundraising year since 2007, totaling \$242 billion in capital raised across 267 funds. First quarter 2018 saw a decline in fundraising, however, with \$37 billion in committed capital reported.
- First quarter 2018 saw a continuation of the trend of GP's aggressively increasing their fund size while LP's are also increasing their allocations, but to fewer funds. Large funds (\$1 billion+) took in more than half of the capital raised during the quarter.

¹ Source: Pitchbook.

Average & Median US PE Buyout Fund Size, 2006 – Q1 2018¹



- First quarter 2018 had the lowest number of funds closed in a five-year period (180) with capital remaining concentrated among the top managers as evidenced by 59% of capital raised during the first quarter going to the 10 largest funds.²
- The average time to close for buyout funds and all PE funds declined to new lows in 2017, yet ticked back up during the first quarter of 2018.¹
- First-time managers accounted for nearly 10% of vehicles in 2017.¹

¹ Source: Pitchbook.

² Source: Preqin.

Portfolio Overview

CalPERS Private Equity Overview
As of June 30, 2018

Strategy	NAV ¹ (\$ mm)	Percent of Total NAV (%)	CalPERS Target (%)	Target Range (%)
Buyout	17,390	64.0	60	50-70
Credit	2,608	9.6	15	10-25
Growth/Expansion	4,511	16.6	15	5-20
Opportunistic	1,872	6.9	10	0-15
Venture	783	2.9	1	0-7
Other ²	-13	NA	NA	NA
Total Program	27,151	7.7 ³	8	+/- 4%

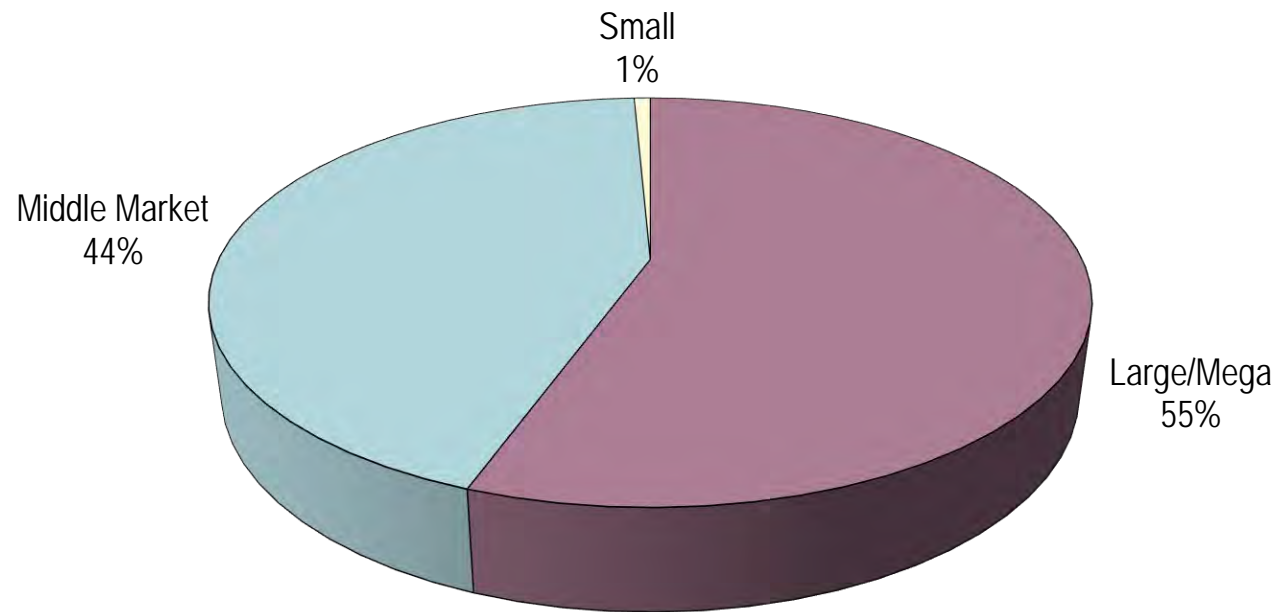
- The CalPERS Private Equity Program was within the diversification ranges outlined in the Private Equity Investment Policy.
- Due to the Program's shift away from Venture in recent years, the sector is becoming a smaller portion of overall exposure.
- The overall private equity program was slightly below the Policy Target of 8% as of June 30, 2018.

¹ Source: State Street.

² Includes currency and stock holdings.

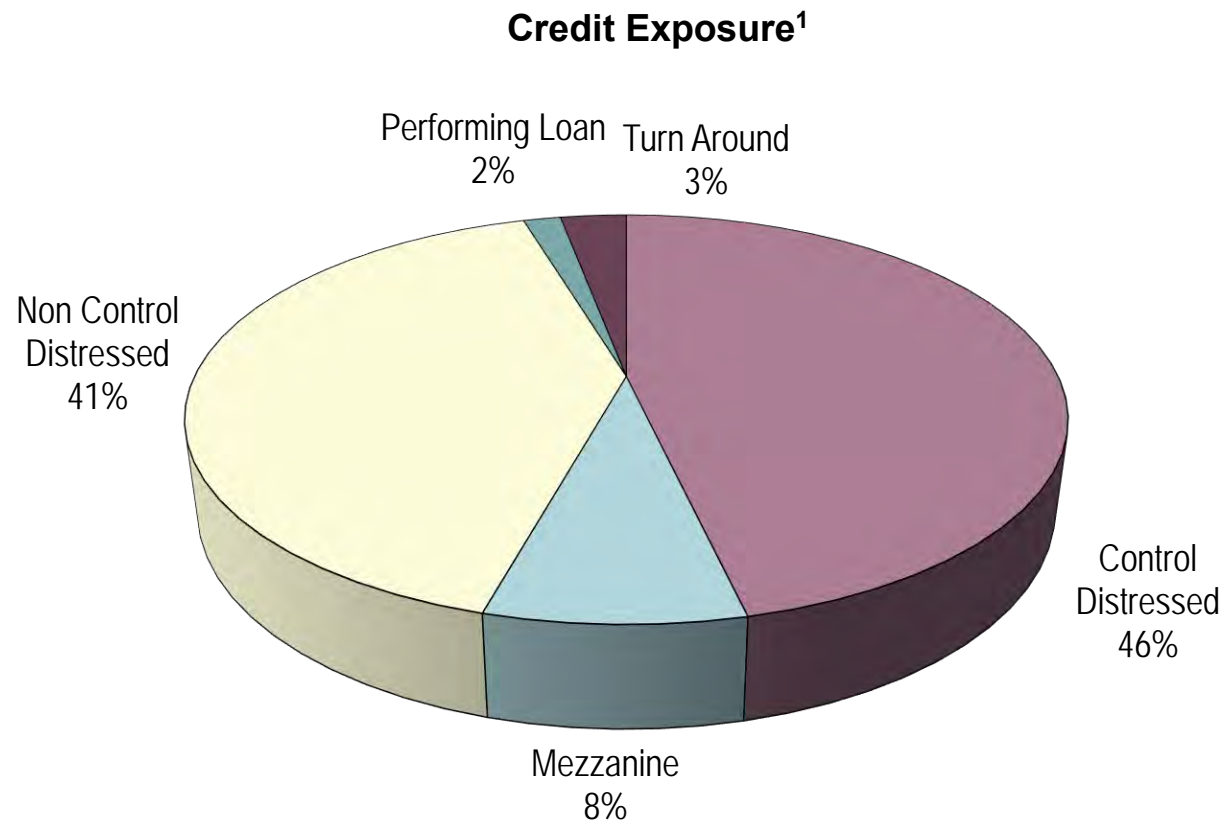
³ PE program NAV as a percent of total CalPERS portfolio as of 6/30/2018.

Buyouts Exposure¹



- The CalPERS Buyouts portfolio maintains a large exposure to both Large/Mega Buyouts (55%) and Middle Market Buyouts (44%), with minimal exposure to Small Buyouts (1%).

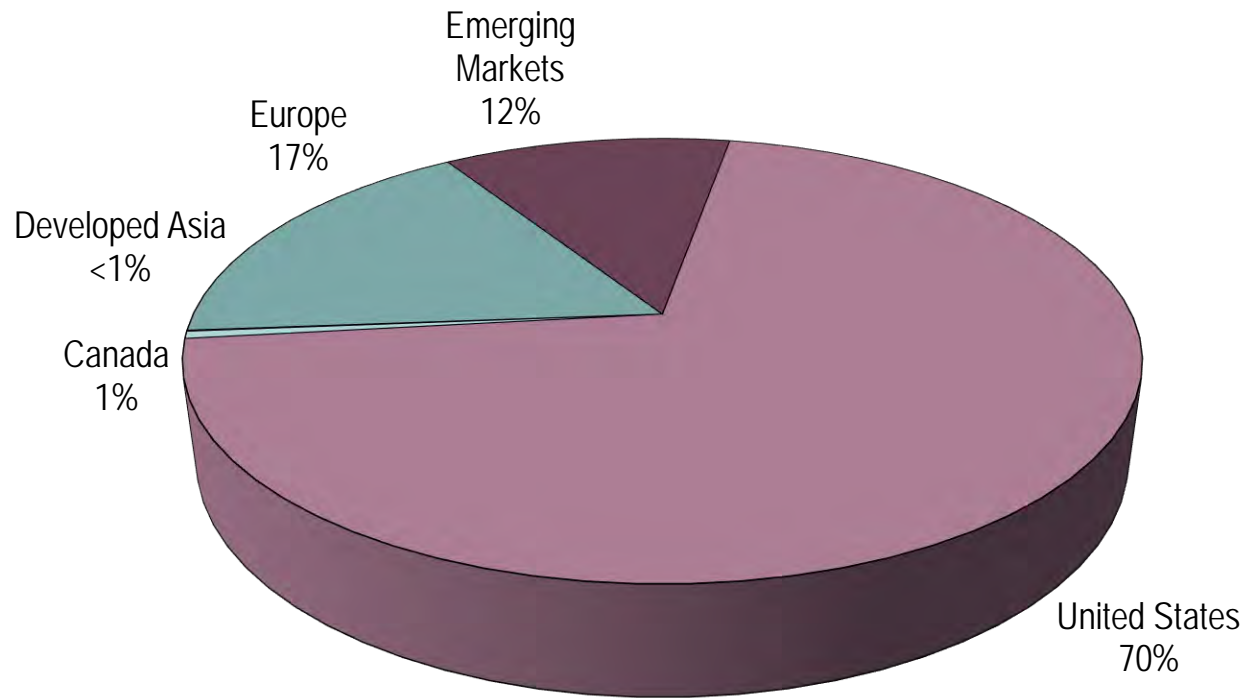
¹ Source: State Street, CalPERS.



- Nearly half of CalPERS Credit portfolio exposure is attributable to Control Distressed investments with another 41% in Non Control Distressed investments. Mezzanine investments (8%), Turn Around investments (3%), and Performing Loans (2%) make up the remainder of CalPERS Credit exposure.

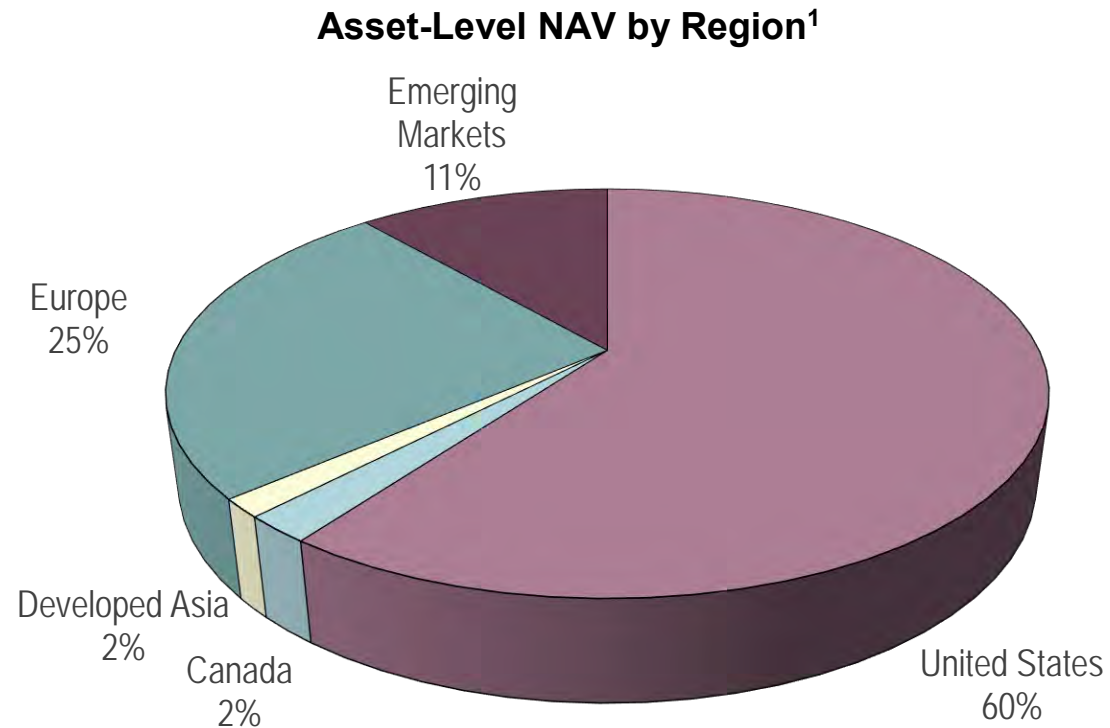
¹ Source: State Street, CalPERS.

Fund-Level NAV by Region¹



- The Program has primarily targeted U.S.-focused investments, which comprise approximately 70% of the total unrealized value.

¹ Source: State Street.

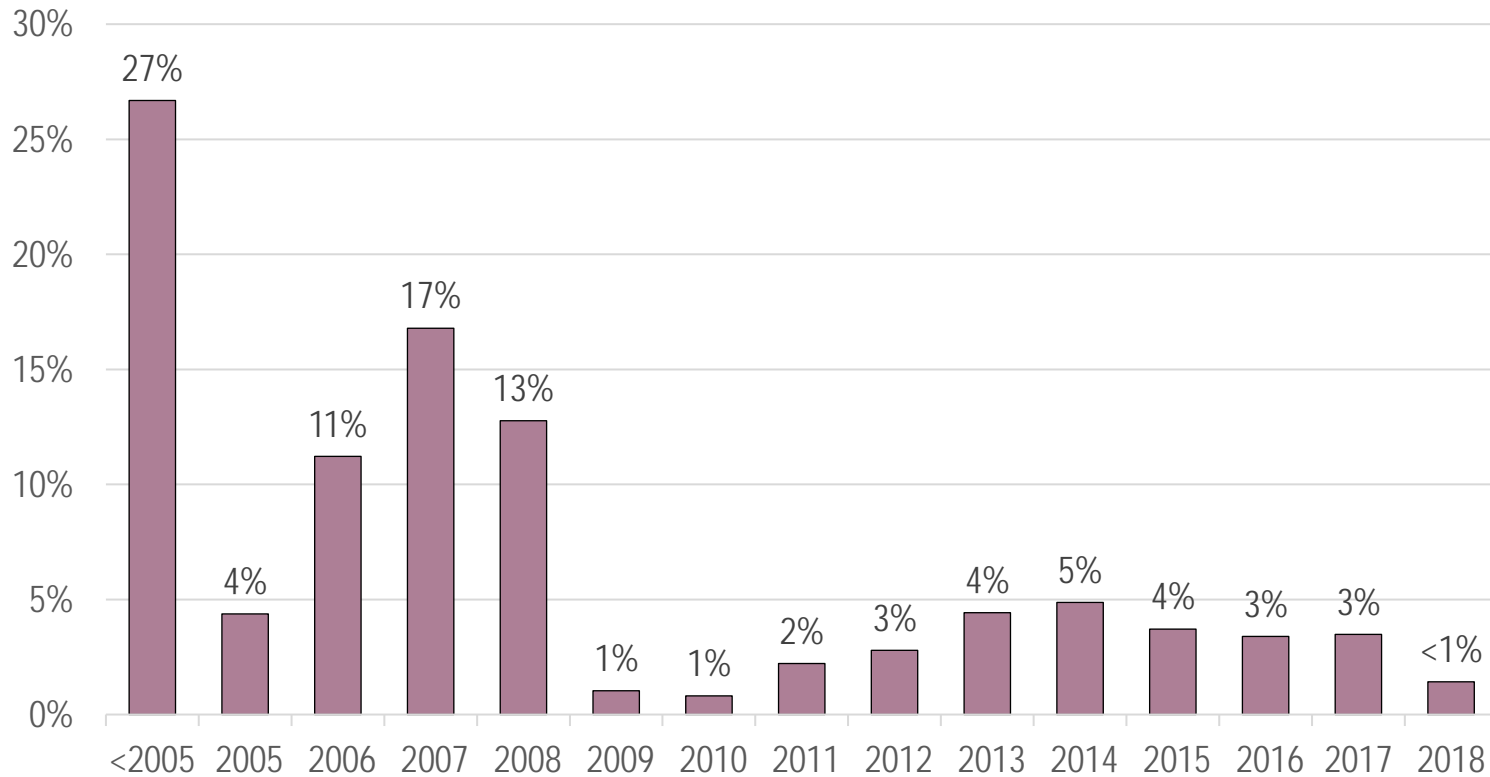


- At the asset level, the majority of the Program's NAV is held in U.S.-based portfolio companies at 60%, along with meaningful exposure to Europe (25%), and Emerging Markets (11%).

¹ Source: CalPERS, as of 6/30/2018.

Vintage Year Composition

Vintage Year (% of Total Commitments)¹

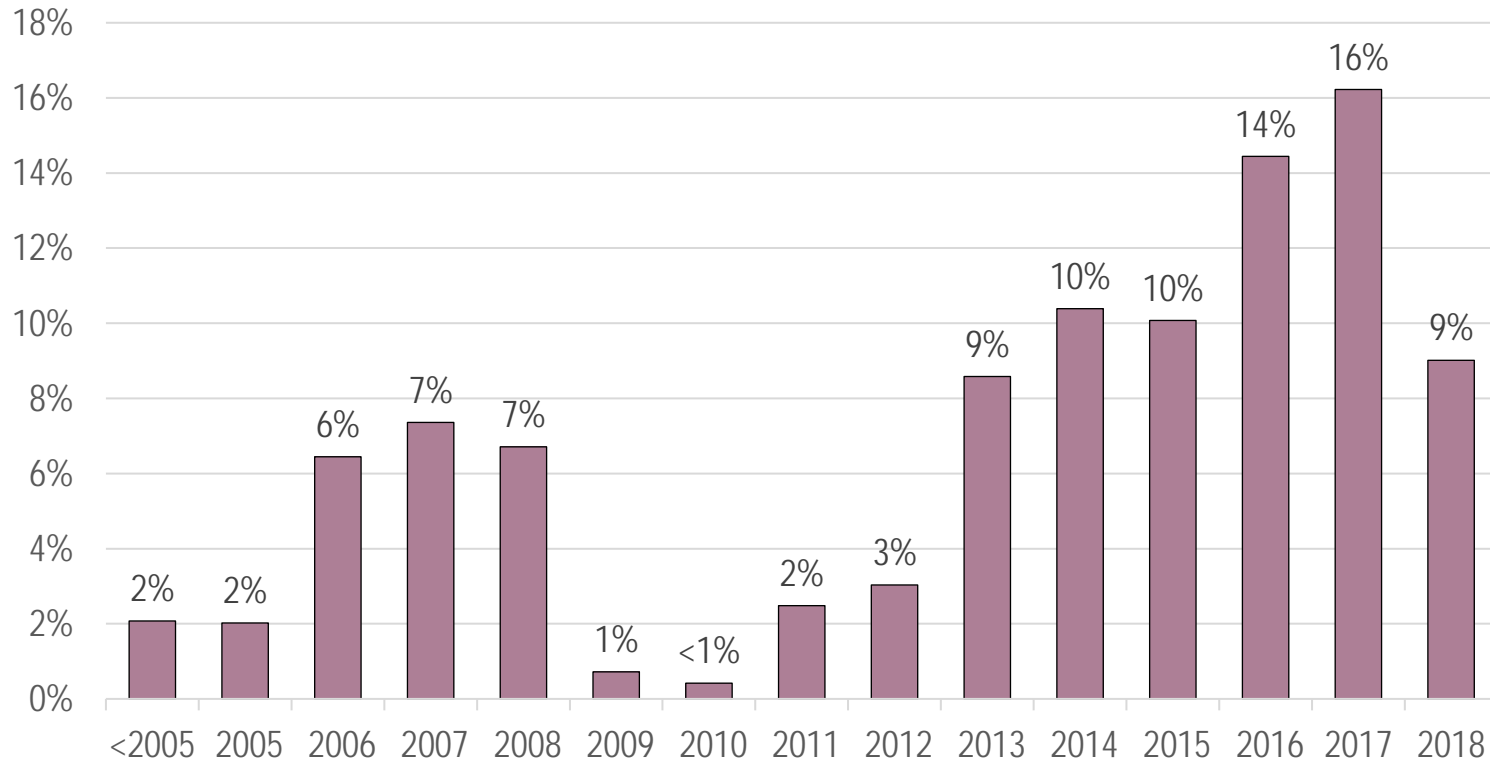


- The PE program made significant commitments to the 2005-2008 vintage years, which represent 45% of total historical commitments. However, these vintages represent only approximately 23% of uncalled capital currently.

¹ CalPERS.

Vintage Year Composition (continued)

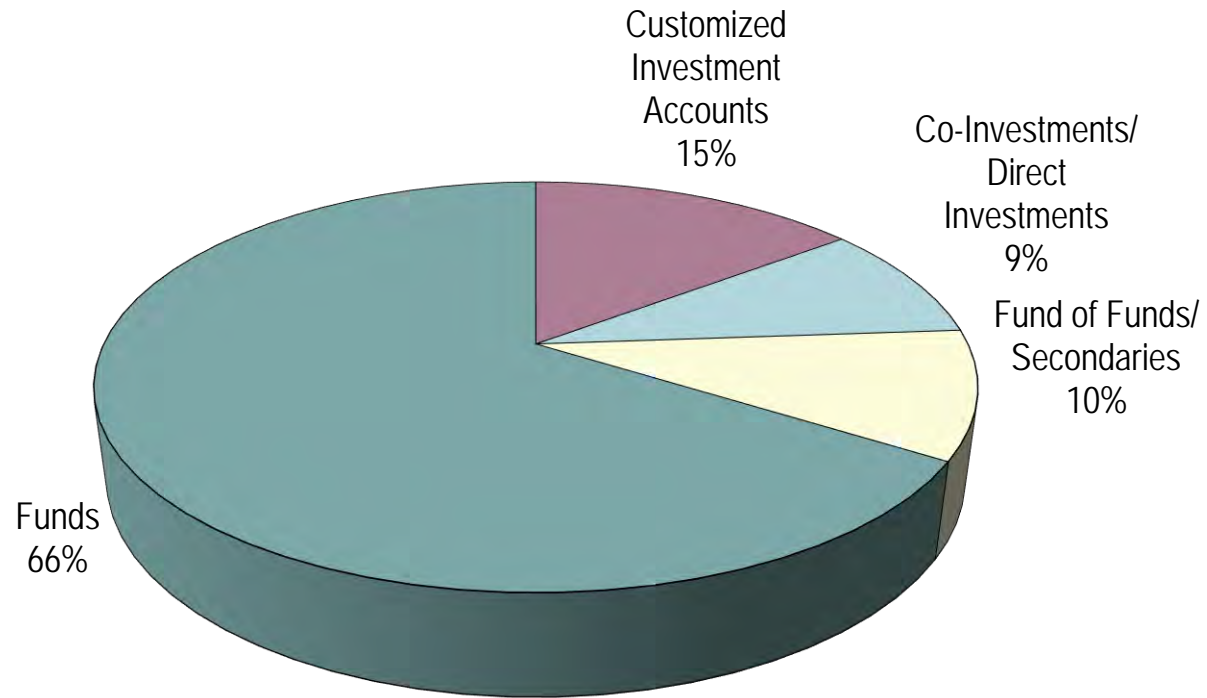
Vintage Year (% of Unfunded Commitments)¹



- Vintage years 2013-2018 account for nearly 70% of the Program’s current unfunded commitments.

¹ CalPERS.

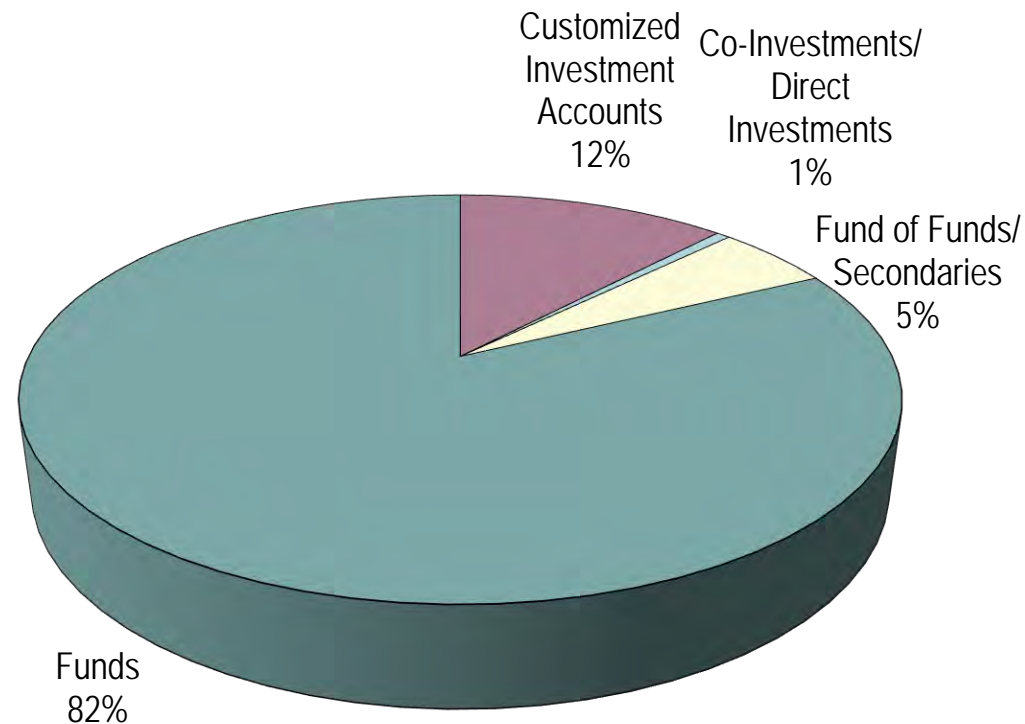
NAV by Structure¹



- Fund investments make up approximately two-thirds of the Program's NAV.

¹ Source: State Street.

Unfunded Commitment by Structure¹



- Fund investments comprise even more of the Program's unfunded commitments (relative to NAV) at over 80% of the total.
- Co-Investments, Direct Investments, Fund of Funds, and Secondaries make up only 6% of the Program's unfunded commitments, while comprising close to one-fifth of the Program's NAV.

¹ Source: CalPERS.

**Largest Manager Relationships
As of June 30, 2018**

Manager	Number of Vehicles ¹	Remaining Value ² (\$ mm)	Unfunded Commitment ² (\$ mm)	Total Exposure (\$ mm)	Total Program Exposure (%)
The Blackstone Group ³	19	2,936	1,436	4,372	10.6
The Carlyle Group ⁴	25	1,198	1,833	3,031	7.3
CVC Capital Partners	8	1,460	1,119	2,579	6.2
Apollo Global Management ⁵	12	1,688	854	2,543	6.2
Cerberus Capital Management ⁶	5	1,136	634	1,769	4.3

- CalPERS PE Program has regularly committed across several vehicles offered by the managers listed above, including select co-investments. In several cases, the commitments are managed by separate teams within the manager and execute on different strategies.
- New commitments to Blackstone Tactical Opportunities III and Carlyle Europe Partners V were made during the first half of 2018.

¹ Only includes vehicles with remaining exposure. Includes co-investments.

² Source: CalPERS.

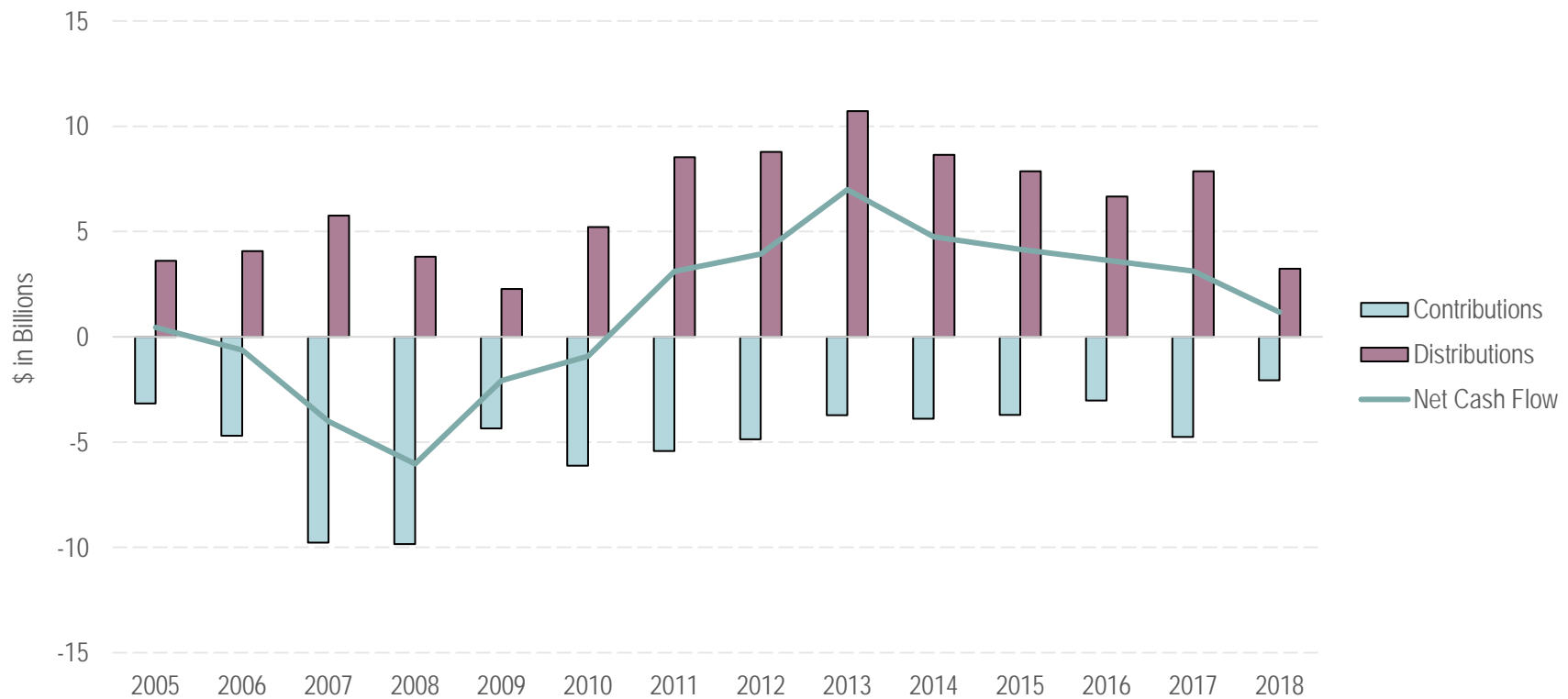
³ Includes GSO.

⁴ Includes Carlyle Realty Partners. Does not include Carlyle/Riverstone.

⁵ Includes managed account and investment in Apollo Global Management.

⁶ Includes managed Avatar Investors.

Annual Cash Flows – Total Program Through June 30, 2018¹

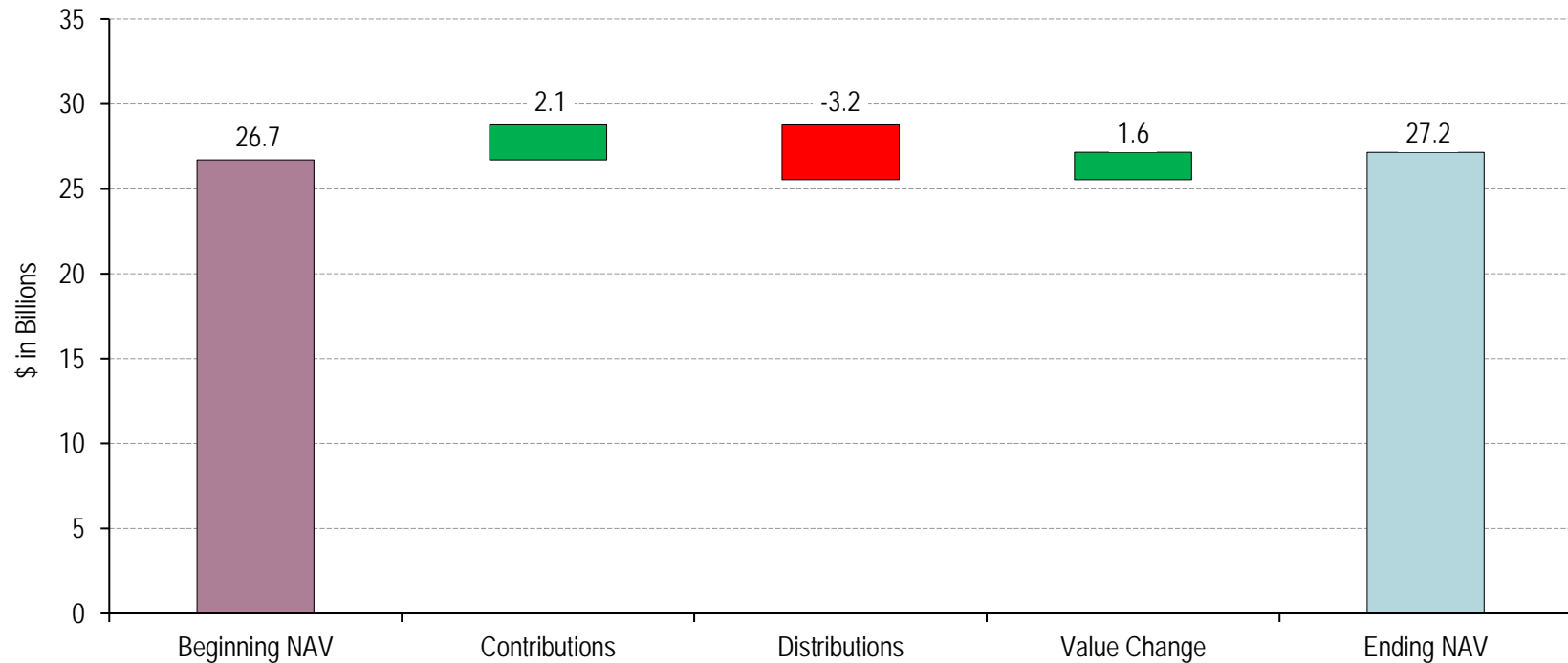


- Since 2011, CalPERS has received \$30.9 billion in net distributions due to the strong exit environment
- This trend continued through the first half of 2018, though net distributions are slowing.

¹ Source: State Street.

Program Performance

Program Value Change – January 1 to June 30, 2018¹



- The Private Equity Program reported a total value increase of \$0.4 billion in the six months from January 2018 to June 2018, with strong net cash distributions offsetting the portfolio value increase.
- The Private Equity Program reported a positive portfolio value increase of approximately \$1.6 billion during this time period.

¹ Source: State Street, CalPERS.

Program Performance

	1 Year	3 Year	5 Year	10 Year
CalPERS PE Program ¹	16.1	10.4	11.9	9.0
<i>Policy Benchmark²</i>	18.6	12.3	14.2	13.5
<i>Cambridge Associates All PE Global³</i>	18.3	12.4	14.0	9.5
<i>FTSE All World + 150 bp⁴</i>	16.9	10.3	11.4	7.7
Excess vs. Policy Benchmark (%)	↓ -2.5	↓ -1.9	↓ -2.2	↓ -4.4
Excess vs. CA All PE Global (%)	↓ -2.2	↓ -2.0	↓ -2.0	↓ -0.5
Excess vs. FTSE All World + 150 bp (%)	↓ -0.8	↑ 0.1	↑ 0.5	↑ 1.3

- The overall Program performance has shown strong returns in the 1-, 3-, and 5-year time periods, but continues to trail the Policy Benchmark.
 - The Program’s historical performance has exceeded the Private Equity projected return included in the recently adopted Capital Market Assumptions (8.3%).
- The Program’s performance has underperformed the Cambridge Associates index (private equity peer index).
- The Program has matched or exceeded FTSE All World Index plus 150 basis points in the 3-, 5-, and 10-year periods.

¹ Source: State Street. CalPERS returns are reported as time-weighted.

² The current Policy Benchmark is a Custom FTSE All World, All Cap Equity + 150 basis points, lagged by one quarter. Previous benchmark was blend FTSE US + FTSE AW ex US + 3% lagged 1 quarter from September 2011 to June 2018, Wilshire 2500 ex-tobacco +3% between July 2009 and September 2011, and the Custom Young Fund Index prior to July 2009.

³ Returns as of March 31, 2018. Figures are IRR.

⁴ Figures are one quarter lagged, time weighted.

Strategy Performance¹

	NAV (\$ mm)	1 Year	3 Year	5 Year	10 Year
Buyouts	17,390	19.8	12.8	13.5	9.8
Credit	2,608	5.9	2.0	5.3	9.3
Growth/Expansion	4,511	16.9	12.4	13.8	6.0
Opportunistic	1,872	7.2	11.1	12.8	7.4
Venture	783	5.0	-3.0	4.3	3.3
Other ²	-13				
CalPERS PE Program	27,151	16.1	10.4	11.9	9.0

- Buyouts and Growth/Expansion investments have generated strong returns in the 1-, 3- and 5-year time periods.
- The Program's Venture portfolio has significantly underperformed other strategies over all trailing periods.
- Credit investments have lagged over the previous 3 years, mostly due to the underperformance of a large managed account.

¹ Source: State Street. All trailing returns included in this report are time-weighted.

² Includes currency and stock holdings.

Performance by Structure¹

	NAV (\$ mm)	1 Year	3 Year	5 Year	10 Year
Customized Investment Accounts	3,980	14.3	9.0	9.9	8.0
Co-Investments/Direct Investments	2,476	27.0	16.3	13.0	4.7
Fund of Funds/Secondaries	2,724	11.1	5.7	11.2	6.5
Funds	17,984	16.1	11.0	12.2	9.9
Other ²	-13				
CalPERS PE Program	27,151	16.1	10.4	11.9	9.0

- Over all trailing time periods, Fund investments have performed well while also making up a significant majority of the PE Program.
- Co-Investments/Direct Investments performed very well in recent years. Due to the concentration of the Co-Investment/Direct Investment portfolio, a small number of substantial investments tend to drive performance.
- Fund of Funds/Secondaries have lagged the broader PE Program over all trailing time periods. Fund of Funds/Secondaries returns have lagged over the last year due to various underperforming Fund of Funds in their distribution phases.

¹ Source: State Street.

² Includes currency and stock holdings.

Performance by Geography¹ (Fund-Level)

	NAV (\$ mm)	1 Year	3 Year	5 Year	10 Year
United States	19,134	13.6	9.0	11.1	9.1
Canada	142	22.0	16.6	17.4	10.0
Developed Asia	18	49.2	30.6	22.1	6.2
Europe	4,653	29.9	19.3	16.9	8.3
Emerging Markets	3,217	14.8	10.0	12.1	8.9
Other ²	-13				
CalPERS PE Program	27,151	16.1	10.4	11.9	9.0

- The Program's returns are largely driven by investments in United States.
- The Program's small investments in Developed Asia have generated substantial returns over the previous 1-year and 3-year periods due to the strong performance of a single fund in the region, while underperforming the broader Program over the previous 10 years.
- European investments have outperformed U.S. investments over the previous 1-, 3-, and 5-year periods, while underperforming over the last 10 years.
- Investments in Canada investments have generated the strongest returns over the prior ten years, while investments in the Emerging Markets have also performed well.

¹ Source: State Street.

² Includes currency and stock holdings.

Program Activity

CalPERS Private Equity Completed Investments – H1 2018

Investment	Date Signed	Geography	Strategy	Commitment (\$ mm)
Clearlake Capital Partners V	January 2018	US	Buyout	75
Carlyle Europe Partners V	April 2018	Europe	Buyout	370
TPG Asia VII	April 2018	Asia	Buyout	300
Blackstone Tactical Opportunities III	May 2018	Global	Opportunistic	500
Permira Growth Opportunities I	May 2018	US/Europe	Growth Equity	200
GSM Grosvenor DEM II	June 2018	US	Fund of Funds ¹	50
TowerBrook Investors V	June 2018	US/Europe	Buyout	400
TowerBrook Structured Opportunities II	June 2018	US/Europe	Opportunistic	250
TPG Healthcare Partners	June 2018	US	Buyout	100
TPG Partners VIII	June 2018	North America/Europe	Buyout	500

- For the first half of 2018, Staff completed eight commitments totaling \$2.7 billion.

¹ Underlying managers are buyout-focused.

Appendix

Vintage Years	Capital Committed ¹ (\$ mm)	Total Contributions ¹ (\$ mm)	Unfunded Commitment ¹ (\$ mm)	Total Distributions ¹ (\$ mm)	Reported Value ¹ (\$ mm)
Vintage Year 1990	125.3	124.1	0.0	298.1	0.0
Vintage Year 1991	171.8	207.2	0.0	537.7	0.0
Vintage Year 1992	160.0	156.6	0.0	341.5	0.0
Vintage Year 1993	538.0	567.9	0.0	1,083.3	0.0
Vintage Year 1994	1,494.2	1,512.9	0.0	2,515.6	0.0
Vintage Year 1995	1,222.9	1,236.8	0.0	2,034.1	0.0
Vintage Year 1996	1,157.3	1,183.2	3.1	1,579.8	0.4
Vintage Year 1997	1,101.7	1,133.5	0.0	1,668.7	0.0
Vintage Year 1998	2,205.5	2,388.1	0.3	3,166.6	0.2
Vintage Year 1999	3,287.4	3,456.3	55.3	4,222.8	72.4
Vintage Year 2000	2,708.5	2,675.5	12.2	3,875.3	18.8
Vintage Year 2001	4,520.3	4,765.9	57.5	7,534.4	237.7
Vintage Year 2002	884.3	1,104.0	1.5	1,501.8	83.9
Vintage Year 2003	1,542.8	1,751.8	39.8	3,473.9	77.7
Vintage Year 2004	1,887.4	1,972.1	43.2	3,154.9	55.8
Vintage Year 2005	3,770.2	3,970.3	207.4	5,582.6	213.2
Vintage Year 2006	9,673.0	10,911.9	661.5	13,426.2	1,496.7
Vintage Year 2007	14,473.8	15,698.2	755.4	19,340.7	3,639.9
Vintage Year 2008	11,008.0	12,510.7	688.7	15,918.8	4,103.5
Vintage Year 2009	891.5	835.7	73.9	527.6	632.8

¹ Source: CalPERS.

Vintage Years (Continued)	Capital Committed ¹ (\$ mm)	Total Contributions ¹ (\$ mm)	Unfunded Commitment ¹ (\$ mm)	Total Distributions ¹ (\$ mm)	Reported Value ¹ (\$ mm)
Vintage Year 2010	699.4	842.7	43.0	941.8	384.0
Vintage Year 2011	1,911.9	1,956.4	254.8	1,536.2	1,389.7
Vintage Year 2012	2,406.0	2,628.2	311.3	1,849.4	1,939.4
Vintage Year 2013	3,816.0	3,647.4	880.9	1,719.2	3,315.8
Vintage Year 2014	4,200.8	3,394.3	1,066.2	1,039.5	3,157.7
Vintage Year 2015	3,200.7	2,237.7	1,034.0	508.5	2,589.2
Vintage Year 2016	2,926.9	2,115.0	1,482.4	345.1	1,953.5
Vintage Year 2017	3,003.2	1,429.1	1,665.1	130.1	1,371.7
Vintage Year 2018	1,231.4	305.9	925.5	0.0	302.4

¹ Source: CalPERS.

Strategies	Capital Committed ¹ (\$ mm)	Total Contributions ¹ (\$ mm)	Unfunded Commitment ¹ (\$ mm)	Total Distributions ¹ (\$ mm)	Reported Value ¹ (\$ mm)
Buyouts	52,980.5	49,864.6	10,847.0	58,615.6	17,280.5
Credit	11,733.0	12,165.1	1,208.3	15,107.5	2,600.5
Growth/Expansion	12,129.9	11,360.5	1,215.2	12,079.3	4,495.7
Opportunistic	5,344.3	5,169.6	869.2	4,823.4	1,871.5
Venture	8,002.2	8,159.6	92.4	9,228.1	788.2

¹ Source: CalPERS.