

2H 2016

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM (CalPERS)
PRIVATE EQUITY PROGRAM SEMI-ANNUAL PERFORMANCE REPORT



INTRODUCTION

Private equity is a long-term asset class with performance results influenced by various factors. This report concentrates on several key exposures that contribute to performance results, including strategy, geography, structure, and vintage year. In addition, the broad industry trends highlighted herein may affect future performance results.

EXECUTIVE SUMMARY

Portfolio Highlights

- **The PE Program underperformed the Policy Benchmark over the 1-, 3-, 5- and 10-year periods.** Despite trailing the Policy Benchmark over the latest 10-year period, the PE Program's average annual return as of December 31, 2016 has exceeded CalPERS' expected return for the private equity asset class, the total fund's assumed rate of return and the peer-based State Street Private Equity Index (SSPEI).
- Including a public market index in the PE Program Policy Benchmark continues to result in questions about comparable performance results, particularly over shorter time periods, though most private equity investors use this type of benchmark and PCA believes it to be reasonable in measuring long-term performance. **We generally expect private equity to underperform rising public equity markets and outperform falling ones.**
- The PE Program has been **net cash flow positive by approximately \$27 billion** (i.e., distributions received exceeded capital contributions made) since 2011.
- **The performance of the portfolio is primarily driven by investments** (a) in the **Buyout** strategy, (b) in the **United States** and (c) utilizing **partnership structures**. This is true over nearly all time periods measured.
- The **PE Program's managers have approximately \$14 billion of "dry powder"** (i.e., unfunded commitments to active investments), approximately \$8 billion of which relates to commitments in the 2012 through 2016 vintage years.
- Although the PE Program is in its 27th year, **95% of value and performance are attributable to commitments made during vintages 2006-2016**. Commitments made in the 2006-2008 vintages represent approximately 49% of aggregate net asset value.
- **The PE Program's five largest GP relationships represent 32% of net exposure**, which is defined as cost plus unfunded commitments.

Industry Trends

- **2016 was a strong fundraising year, with total commitments, both domestically and internationally, exceeding 2015 levels.** The fundraising environment remains robust, as domestic commitments totaled approximately \$280 billion. Most top performing firms have been over-subscribed in their latest offerings.
- **Commitments to buyout funds in 2016 approached \$200 billion,** accounting for 68% of total U.S. fundraising.
- **Purchase price multiples in the U.S. leveraged buyout market demonstrated a slight decline** (from 10.1x as of June 30 to 10.0x as of December 31), while average debt multiples remained at 5.5x.
- **U.S. purchase price multiples at or near 2007 levels** (i.e., at the peak immediately preceding the financial crisis) while debt multiples remain slightly below 2007 levels.
- **Venture capital merger and acquisition activity remained robust, and exceeded 2015 levels,** while venture capital IPO volume modestly decreased relative to 2015.
- **The outlook for distressed debt investment strategies continues to be mixed,** as default rates remain very low but a turn in the cycle could materially increase the opportunity set.
- **Given the change in leadership at the S.E.C., it is unclear at this time whether the agency's heightened scrutiny on private equity will continue.** Over the last several years, the S.E.C. has entered into settlements with numerous private equity managers, particularly with respect to managers' fee and expense allocation practices and conflicts of interest.
- **Adoption of the fee reporting template created by the Institutional Limited Partners Association has slowed in recent months,** despite early adoption by leading managers such as Advent International, Apollo, Blackstone, Carlyle, Hellman & Friedman, KKR, Silver Lake and TPG, in addition to investors including CalPERS. Although several outside firms have launched automated reporting systems specifically intended to help managers comply with the template's requirements, the overall lack of traction is disappointing to supporters of the template such as PCA.

OVERALL PRIVATE EQUITY PROGRAM PERFORMANCE

Performance vs. Policy Benchmarks

	1-Year	3-Year	5-Year	10-Year
CalPERS' PE Program¹	6.6%	8.8%	11.5%	9.8%
<i>PE Program Policy Benchmark²</i>	16.7%	10.2%	16.4%	12.8%
<i>Pro Forma Current Policy Benchmark</i>	16.7%	10.2%	16.0%	8.9%
<i>State Street Private Equity Index (SSPEI)³</i>	8.5%	9.6%	11.1%	9.0%
Excess Return				
<i>v. Policy Benchmark</i>	(10.1%)	(1.4%)	(4.9%)	(3.0%)
<i>v. Pro Forma Current Policy Benchmark</i>	(10.1%)	(1.4%)	(4.5%)	0.9%
<i>v. SSPEI</i>	(1.9%)	(0.8%)	0.4%	0.8%

Source: Wilshire Associates, State Street, CalPERS, PCA

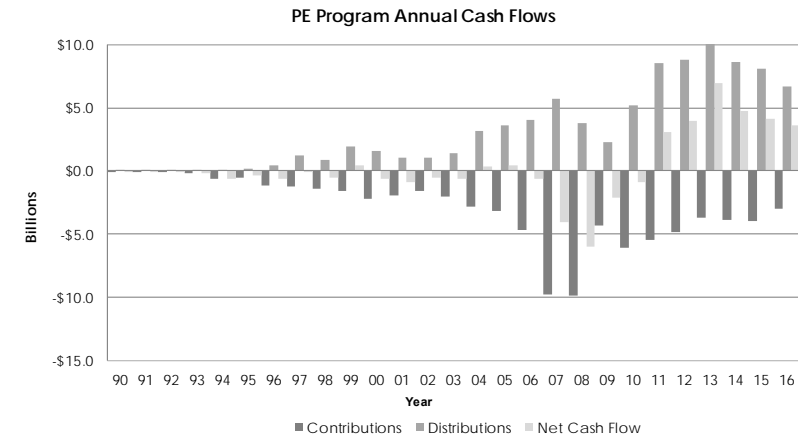
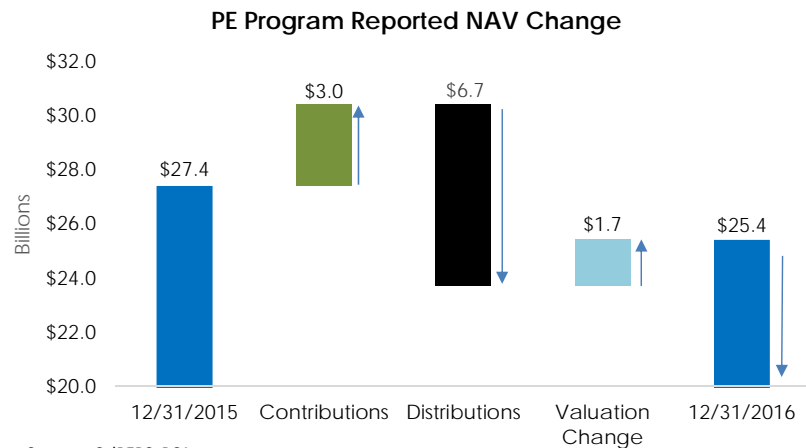
- o The PE Program represents 8.4% of the total CalPERS portfolio, 0.4% above the interim target (when adopted) of 8% and 3.6% below the long-term target of 12%.
- o The Program underperformed the Policy Benchmark by 10.1% over the latest year, largely attributable to rising public markets. The 1-year return of 6.6%, up from 1.7% as of June 30, 2016, is generally reflective of broader market movements.
- o Over the 10-year period, the PE Program underperformed the Policy Benchmark by 3.0% despite generating a 9.8% annual return.
- o If the current public market-linked component of the Policy Benchmark had been used throughout, the PE Program would have generated long-term outperformance of 0.9% over the 10-year period. The "Policy Benchmark" as used herein is comprised of a blend of the three benchmarks that have been in effect at various times throughout the last decade.
- o The PE Program has outperformed the expected return for the asset class (9.3%), the total fund's actuarial rate of return (7.5%) and the SSPEI (a peer-based industry benchmark) over the 5- and 10-year periods. Given the long term nature of private equity, the longer term results are more instructive in analyzing overall performance than is the 1-year return.
- o The PE Program has outperformed CalPERS' Global Equity portfolio over the 3-, 5-, and 10-year periods, while underperforming over the 1-year term.

¹ The net asset value of CalPERS' PE Program portfolio is lagged one quarter with adjustments for current cash flows through the reporting period.

² Currently equals (67% FTSE US TMI + 33% FTSE AW x-US TMI) + 3% 1-quarter lagged from and since September 2011; previous benchmark was the Wilshire 2500 ex-tob + 3% between July 2009 and August 2011. Prior to July 2009 the PE Program Policy Index was linked historically to the Custom Young Fund Index.

³ Time-weighted return calculated by linking quarterly return, 1-quarter lagged.

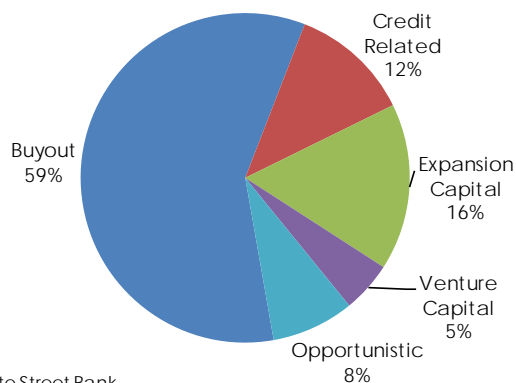
NET ASSET VALUE CHANGE AND CASH FLOWS



- o The PE Program's net asset value (NAV) decreased by approximately \$2.0 billion in 2016 due to approximately \$6.7 billion of distributions from managers, which exceeded contributions of \$3.0 billion. Net cash flow was \$3.6 billion for calendar 2016.
- o Net cash flow in the first half of fiscal 2017 was \$2.3 billion; the PE Program has been cash flow positive every year since 2011.
- o Over the three calendar year period ending December 31, 2016, the PE Program received \$23.4 billion in distributions while contributing \$10.8 billion, resulting in a positive net cash flow of \$12.6 billion.
- o Distributions from managers have been high due to an attractive exit market as demonstrated by the persistence of elevated purchase price multiples and availability of credit, particularly in the large buyout sector.
- o During the second half of 2016, the PE Program disposed of interests in 26 funds, spanning 16 managers, on the secondary market, generating gross sale proceeds of approximately \$434 million.

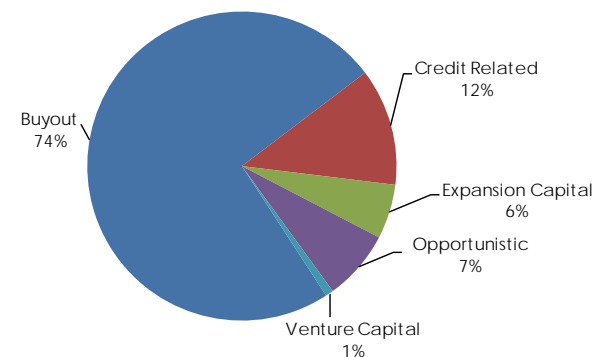
PORTFOLIO STRATEGY COMPOSITION

PE Program NAV by Strategy: \$25.4 B



Source: State Street Bank

PE Program Unfunded Commitments by Strategy: \$14.2 B



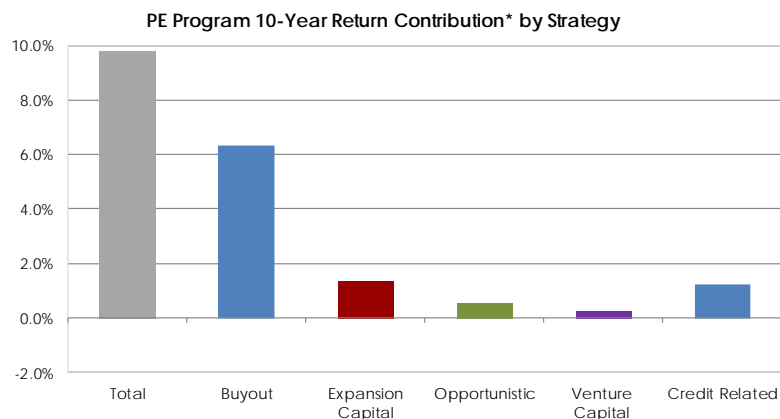
Sources: State Street, CalPERS, PCA

Target Strategy Allocations

Strategy	Target	Range	Actual
Buyout	60%	50%-70%	59%
Credit Related	15%	10%-25%	12%
Venture Capital	1%	0%-7%	5%
Growth/Expansion	15%	5%-20%	16%
Opportunistic	10%	0%-15%	8%

- o All strategy allocations are within target ranges.
- o The Buyout strategy represents the greatest proportion of the PE Program’s unfunded commitments and will therefore continue to be its largest exposure prospectively, which is consistent with the overall private equity opportunity set.
- o Venture Capital, which comprises 5% of the PE Program’s overall NAV, represents 1% of unfunded commitments, demonstrating the PE Program’s pivot from this strategy in recent years.
- o The PE Program currently owns interests in over 6,000 portfolio companies, led by investments in the consumer discretionary, financials, information technology, healthcare, industrials, and energy sectors.

PORTFOLIO STRATEGY PERFORMANCE



* Sector return weighted by proportion of NAV.
Source: State Street, PCA

Performance Summary: By Strategy

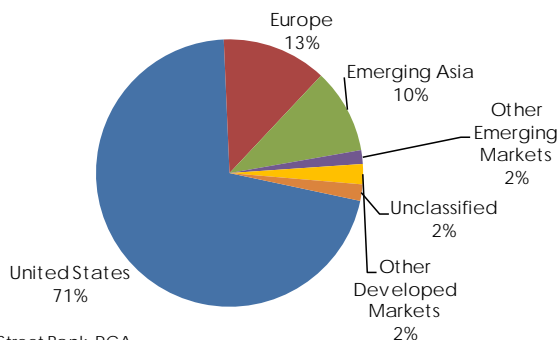
	1 Year	3 Year	5 Year	10 Year
PE Program	6.6%	8.8%	11.5%	9.8%
<i>Buyout</i>	9.7%	10.1%	11.9%	10.9%
<i>Credit Related</i>	(0.5%)	3.2%	12.0%	10.4%
<i>Expansion Capital</i>	6.5%	7.8%	10.4%	8.3%
<i>Venture Capital</i>	(6.3%)	5.1%	5.4%	4.9%
<i>Opportunistic</i>	7.5%	16.7%	12.0%	6.8%

Sources: Wilshire, State Street

- o Two strategies (Credit Related and Venture Capital) produced negative returns for the 1-year period ending December 31, 2016. None of the five strategies have produced negative returns over the 3-, 5- or 10-year time periods.
- o The Credit Related 1-year loss of 0.5% represents an improvement relative to the 1-year performance as of June 30, 2016, which was a loss of 8.6%. Of the 10 largest Credit Related holdings, only four generated negative 1-year returns, whereas eight had negative 1-year returns as of June 30, 2016.
- o The Venture Capital 1-year loss of 6.3% increased from 4.9% in the previous period, largely attributable to two underperforming investments with one of the strategy's largest managers.
- o The largest contributor to overall performance was the Buyout strategy, which represents 59% of the PE Program's NAV. The Buyout strategy has generated attractive results over the longer 10-year period, posting an average annual return of 10.9%.
- o The PE Program's three largest strategies based on NAV, Buyout, Expansion Capital and Credit Related, have also been the best performing over the 10-year period. These three strategies, in aggregate, represent approximately 87% of the PE Program's NAV.
- o Venture Capital, the PE Program's smallest strategy, has also been its lowest performing over the 5- and 10-year periods.

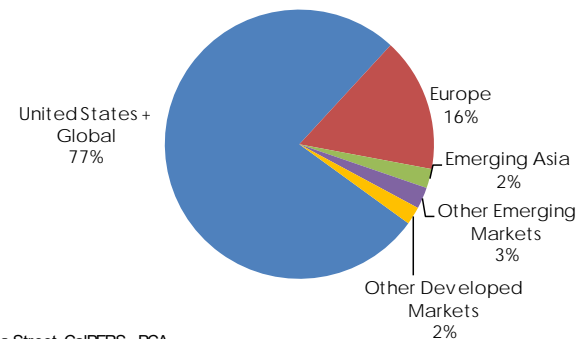
PORTFOLIO GEOGRAPHIC COMPOSITION AND PERFORMANCE

PE Program NAV by Geography: \$25.4 B



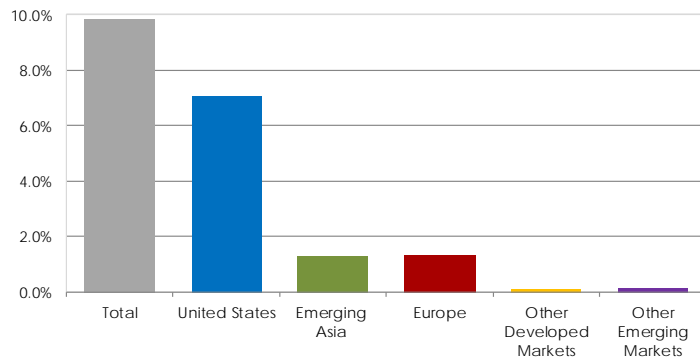
Source: State Street Bank, PCA

PE Program Unfunded Commitments by Geography: \$14.2 B



Sources: State Street, CalPERS, PCA

PE Program 10-Year Return Contribution* by Geography



* Geographic return weighted by proportion of NAV.
Source: State Street, PCA

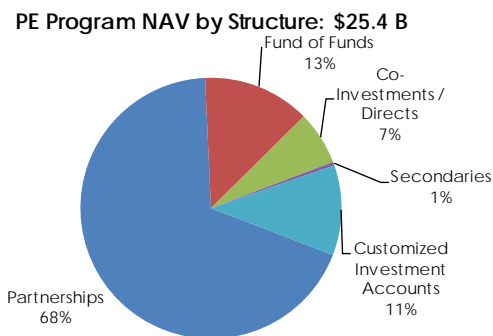
Performance Summary: By Geography

	1 Year	3 Year	5 Year	10 Year
PE Program	6.6%	8.8%	11.5%	9.8%
<i>United States</i>	4.4%	7.7%	11.5%	9.8%
<i>International-Developed World</i>	17.0%	12.5%	12.1%	9.8%
<i>International-Emerging Markets</i>	10.8%	13.0%	11.7%	11.9%

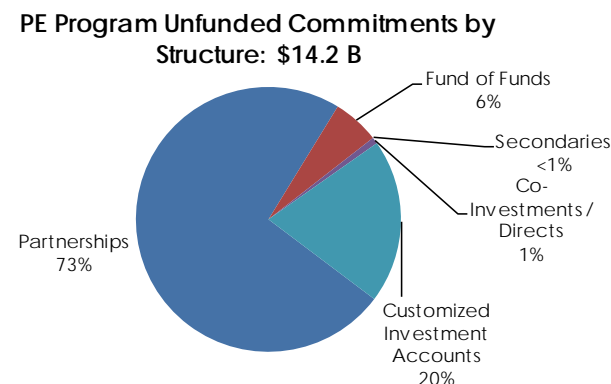
Sources: Wilshire, State Street

- o Performance results were positive in all geographic sectors (based on geographic mandate) over all time periods.
- o The predominance of domestic investments in the portfolio closely links the overall PE Program’s performance to its U.S. holdings, which demonstrated improved short-term performance relative to the prior period. Only three of the 20 largest U.S. holdings declined in value over the 1-year period ending December 31, 2016, as compared to six for the period ending June 30, 2016, indicating a broader improvement consistent with the overall PE Program over the same time period.
- o Over the longer 5- and 10-year time periods, performance across geographic regions has been generally consistent.
- o The PE Program’s only meaningful non-U.S. dollar exposure is in the Euro, which currently represents 8% of NAV.

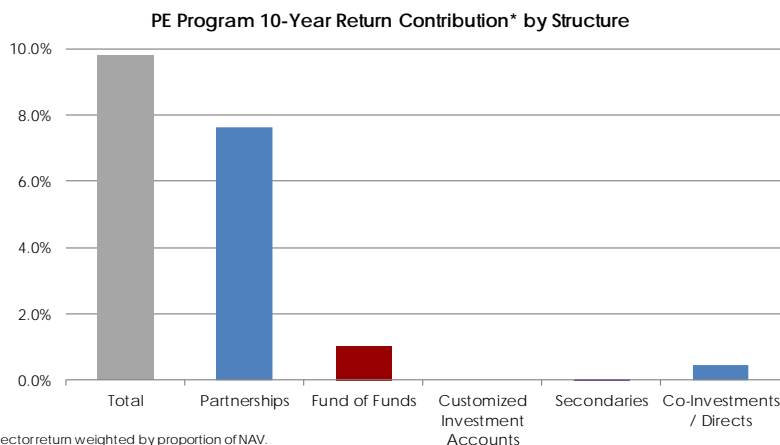
PORTFOLIO STRUCTURE COMPOSITION AND PERFORMANCE



Source: State Street Bank



Sources: State Street, CalPERS, PCA



* Sector return weighted by proportion of NAV.
Source: State Street, PCA

Performance Summary: By Structure

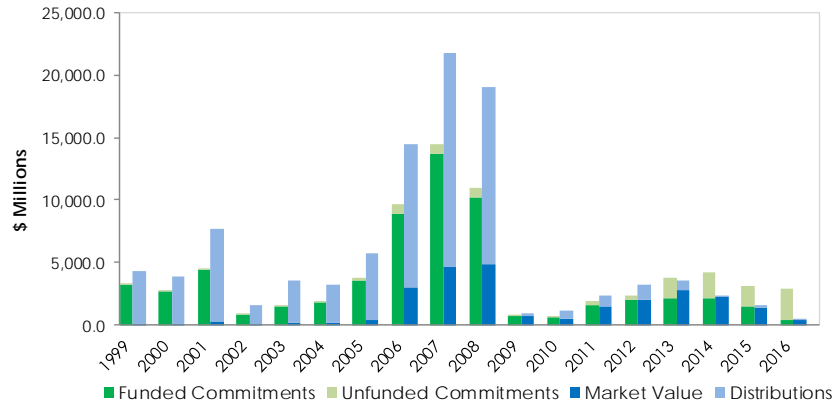
	1 Year	3 Year	5 Year	10 Year
PE Program	6.6%	8.8%	11.5%	9.8%
<i>Partnerships</i>	8.1%	8.9%	12.1%	10.6%
<i>Customized Investment Accounts</i>	5.3%	8.4%	10.9%	NA
<i>Fund of Funds</i>	2.9%	12.5%	10.3%	7.4%
<i>Co-Investments/Directs</i>	4.1%	0.2%	6.7%	6.6%
<i>Secondaries</i>	(8.5%)	4.1%	4.7%	7.5%

Sources: Wilshire, State Street

- o Partnership structures are the largest contributor to performance over all time periods, and these investments have also generated the strongest and most consistent long-term performance.
- o Co-investment underperformance has caused the Co-Investment/Direct portfolio to lag the PE portfolio over all time periods. Direct investments have fared better over the long-term but are a smaller contributor to overall performance.
- o Approximately 93% of all unfunded commitments have been allocated to Partnerships or Customized Investment Accounts, demonstrating the PE Program’s emphasis on these structures in recent years.
- o Co-investments and Secondaries, though representing approximately 7% of the PE Program’s NAV, comprise only 1% of unfunded commitments, due to the fact that transactions in these segments are frequently funded (or substantially funded) upon closing.

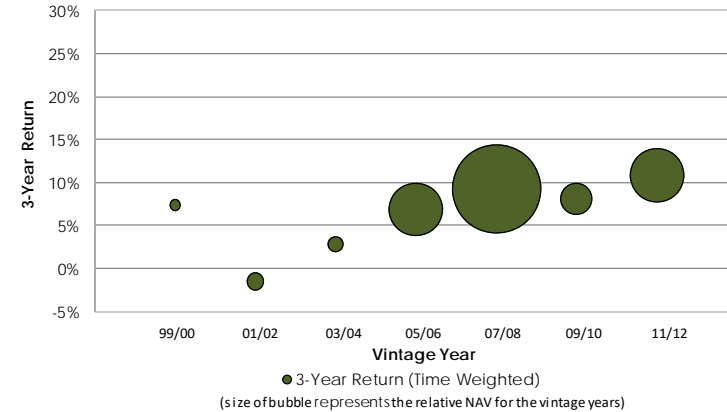
PORTFOLIO VINTAGE YEAR COMPOSITION AND PERFORMANCE

Commitments and Total Value by Vintage Year



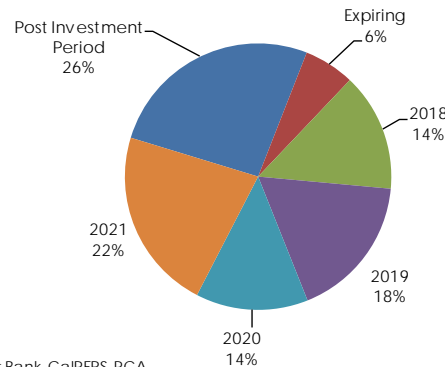
Sources: CalPERS, PCA

PE Program 3-Year Return: By Vintage Year



Source: State Street Bank, PCA

PE Program Unfunded Commitments by Maturity



Source: State Street Bank, CalPERS, PCA

- o The Program currently has \$62.1 billion in active commitments, \$14.2 billion of active and authorized unfunded commitments, \$25.4 billion in NAV and \$40.9 billion in net exposure (cost + unfunded commitments).
- o Approximately 47% of active commitments and 50% of NAV are currently represented by the 2006-2008 vintage years at \$28.9 billion and \$12.6 billion, respectively. Over this period, the PE Program invested in 175 opportunities, of which 119 remain active.
- o Near-term expirations are smaller due to slower commitment activity between 2009 and 2011. Recent commitment activity has increased the longer-dated expirations. Post-financial crisis commitments are increasingly contributing to the PE Program’s performance, as the bubble chart above demonstrates.

ANNUAL COMMITMENT ACTIVITY AND MANAGER CONCENTRATION

PE Program Commitment Activity: Fiscal Year 2016/2017 through 12/31/16

<u>Partnership/Firm</u>	<u>Commitment (\$M)</u>	<u>Sector</u>	<u>Relationship</u>
Carlyle Strategic Partners IV	\$150	Credit Related	Existing
Cerberus CAL II Partners	\$500	Buyout	Existing
Clayton Dubilier & Rice X	\$150	Buyout	New
Permira VI	\$440	Buyout	Existing
Trident VII	\$270	Buyout	Existing
Total	\$1,510		

Source: CalPERS, PCA

Largest PE Program Relationships by Net Exposure

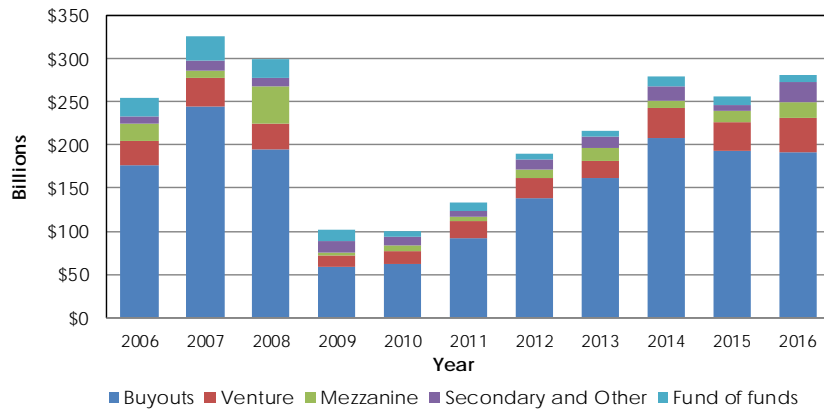
<u>Firm</u>	<u>Investments</u>	<u>Net Exposure (\$M)</u>	<u>% of Program</u>
Blackstone Group	22	\$4,411	11%
Carlyle Group	26	\$2,593	6%
CVC Capital	9	\$2,338	6%
Apollo Global Management	12	\$2,183	5%
Riverstone Holdings	7	\$1,822	4%

Source: CalPERS, PCA

- o The PE Program authorized capital commitments totaling approximately \$1.5 billion across opportunities with five different managers during the first half of the 2016-2017 fiscal year.
- o Four of the five commitments made during the fiscal year were with existing managers in the portfolio.
- o The PE Program's five largest relationships, based on net exposure (defined as cost plus unfunded commitments), represent, in aggregate, approximately 32% of the program's overall net exposure, across over 75 active investments, with capital allocated to multiple strategies, structures and geographies.

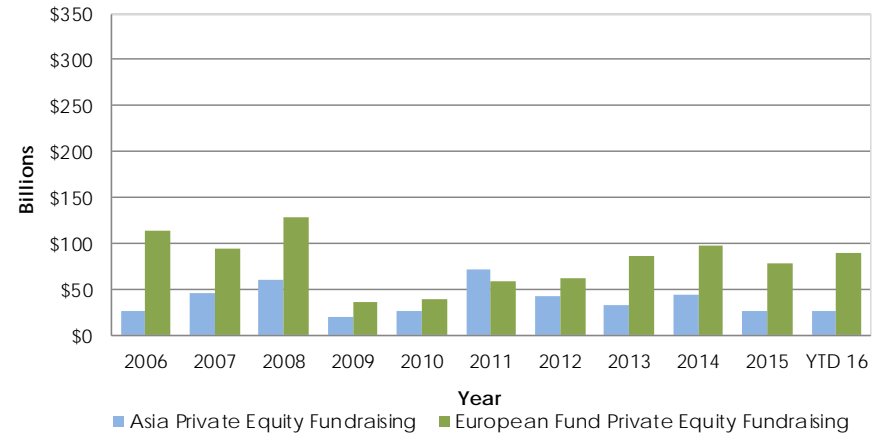
PRIVATE EQUITY MARKET OVERVIEW

Commitments to U.S. Private Equity Partnerships



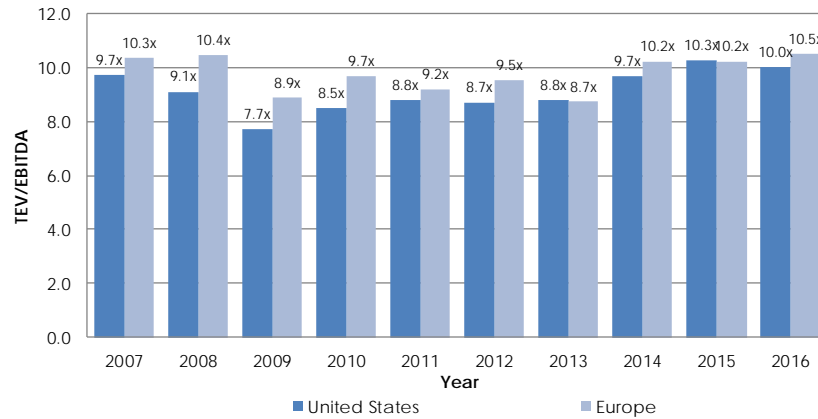
Source: Private Equity Analyst through December 2016

Commitments to Non-U.S. Private Equity



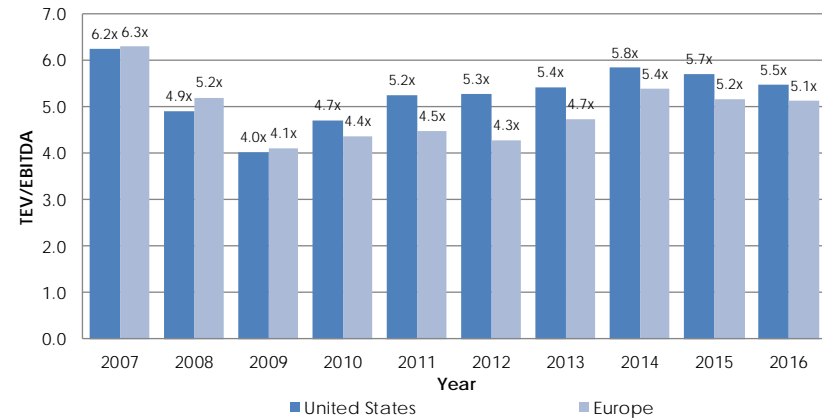
Source: Thomson Reuters, through September 2016

Purchase Price Multiples



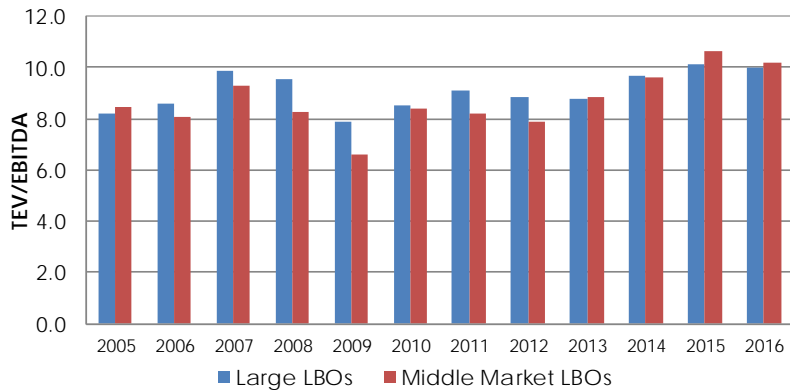
Source: S&P Global

Debt Multiples



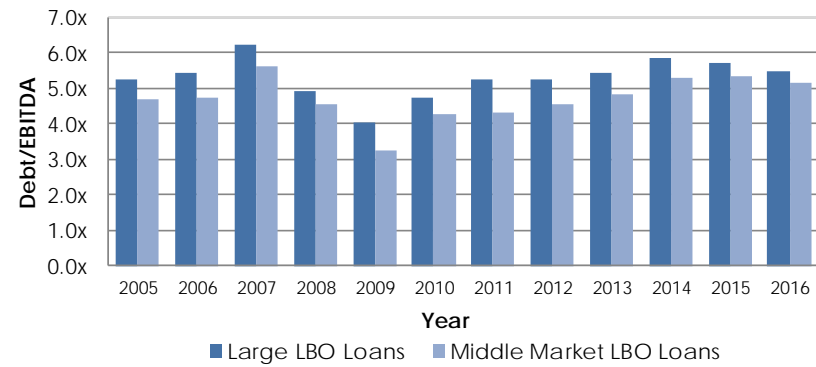
Source: S&P Global

U.S. Purchase Price Multiples: Large vs Middle Market



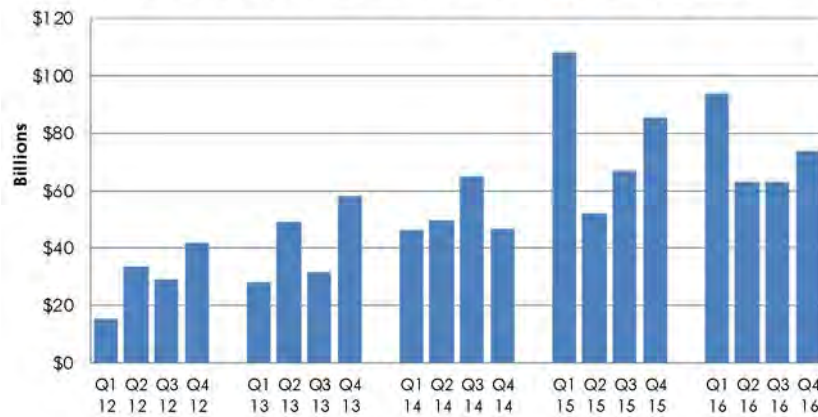
Source: S&P Global

Average Debt Multiples: Large vs Middle Market*



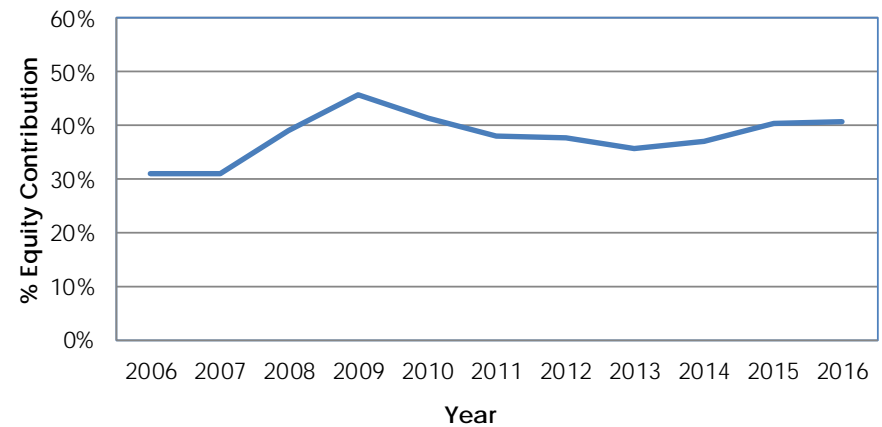
*Large defined as issues w ith EBITDA >\$50M, Middle Market issuers w ith EBITDA <\$50M
Source: S&P Global

Announced and Disclosed U.S. Quarterly LBO Deal Value*

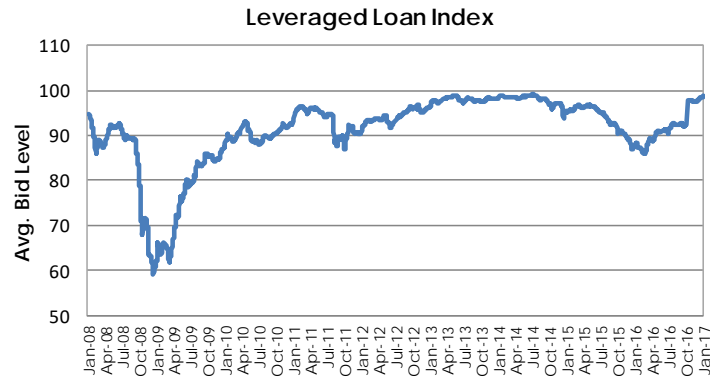


* Total deal size (both equity and debt).
Source: Thomson Reuters Buyouts

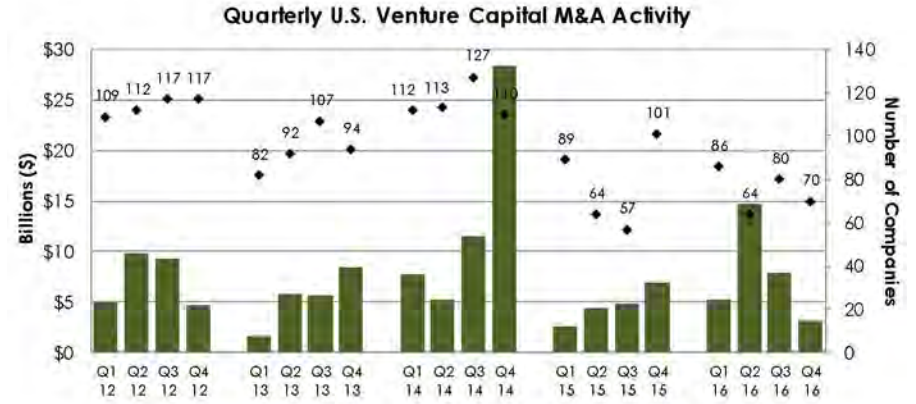
Equity Contribution



Source: S&P Global



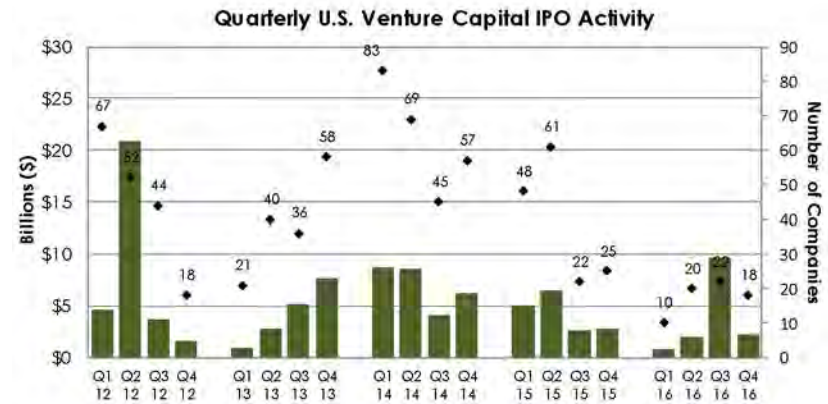
Source: Loan Syndications and Trading Association (LSTA)



Source: Thomson Reuters



* Only includes equity portion of deal value.
Source: Thomson Reuters



Source: Thomson Reuters

Appendix 1: PE Program Relationships by Net Exposure (Cost plus Unfunded Commitments)

<u>Firm</u>	<u>Net Exposure (\$M)</u>	<u>% of Program</u>	<u>Firm (continued)</u>	<u>Net Exposure (\$M)</u>	<u>% of Program</u>
Blackstone Group	4,411	11%	CDH Ventures Partners	195	<1%
The Carlyle Group	2,593	6%	Green Equity Investors	178	<1%
CVC Capital Partners	2,338	6%	Madison Dearborn Partners	175	<1%
Apollo Global Management LLC	2,183	5%	Wellspring Capital Management	172	<1%
Riverstone Holdings	1,822	4%	Clearlake Capital Group	163	<1%
TPG Capital	1,707	4%	SAIF Partners	159	<1%
Grove Street Advisors	1,657	4%	Arclight Capital Partners	155	<1%
KKR & Co.	1,440	4%	Centerbridge Partners	151	<1%
Cerberus Capital Management	1,438	4%	Patria Investmentos S.A.	150	<1%
Advent International	1,330	3%	Palladium Equity Partners	149	<1%
First Reserve	1,089	3%	Polish Enterprise	143	<1%
Grosvenor Capital Management Holdi	1,007	2%	The Jordon Company	139	<1%
Bridgepoint Capital	952	2%	PAG	132	<1%
Hellman & Friedman Capital Partners	930	2%	Jasper Ridge Partners	131	<1%
Permira	907	2%	Lion Capital	125	<1%
TowerBrook Capital Partners	891	2%	Aisling Capital	123	<1%
Ares Management LLC	730	2%	THL Equity Advisors	122	<1%
Silver Lake Partners	720	2%	KPS Capital Partners	117	<1%
Yucaipa Companies	648	2%	VantagePoint Venture Partners	115	<1%
57 Stars	625	2%	Coller Capital	113	<1%
Stonepoint Capital	588	1%	Oaktree Capital Management	107	<1%
Welsh, Carson, Anderson & Stowe	585	1%	Essex Woodlands Health Ventures	102	<1%
Insight Capital	552	1%	Lime Rock Partners	99	<1%
Sankaty Advisors	500	1%	Affinity Equity Partners	88	<1%
Capital Dynamics	433	1%	W Capital Partners	84	<1%
Onex Corporation	397	1%	Triton Managers	84	<1%
KMCP	351	1%	Rhone Partners	81	<1%
Hamilton Lane Advisors, L.L.C.	342	1%	Baring	79	<1%
MHR Fund Management	319	1%	Clarus Ventures	76	<1%
WL Ross & Co	307	1%	EM Alternatives	76	<1%
Asia Alternative Assets	263	1%	Siris Capital Group	75	<1%
Providence Equity Partners	255	1%	Vicente Capital	75	<1%
GSO Capital Partners	251	1%	Sageview Capital, LLC	73	<1%
Tailwind Capital	251	1%	Riverwood Capital, LLC	70	<1%
Goldberg Lindsay & Co. LLC	246	1%	Richardson Financial Group	57	<1%
Oak Hill Capital Partners	239	1%	Avenue Capital Group	50	<1%
New Mountain Capital, LLC	238	1%	Aberdare	47	<1%
Khosla Ventures	212	1%	Clearwater Capital	43	<1%
Francisco Partners	208	1%	HarbourVest Partners, LLC	41	<1%
Birch Hill Equity Partners	206	1%	OTHER	427	1%

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