PRIVATE EQUITY TRENDS
CalPERS Private Equity

June 2017

State of Private Equity – Table of Contents

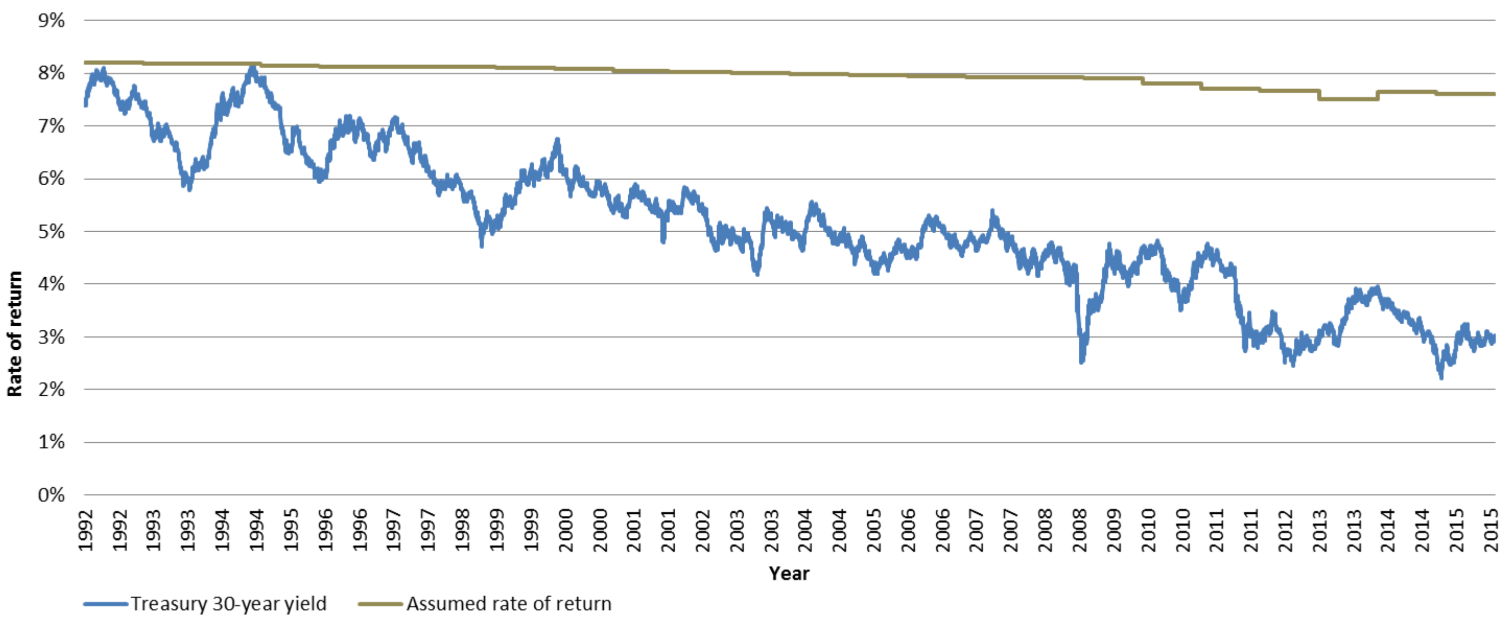
Private Equity Market Trends

Private Equity Market Trends Summary

- The decline in long term yields since 1992 has had significant asset allocation implications:
  - According to Pew research, the asset allocation required to yield target returns today is more than twice as volatile as the allocation required 20 years ago, as measured by the standard deviation of returns.
  - Plans increasingly are targeting alternatives to bridge the equity risk premium gap – the difference between target rates of return and the risk free yield.
  - Commensurate with the decline in yields, allocation to Alternatives has increased while the commitment to less risky investments has declined.
    - According to a 2016 Preqin Survey of over 460 institutional investors, 52% of respondents planned to increase allocations to Private Equity
- Available dry powder for investments by private equity managers continues to reach record levels, increasing to $868 billion in 2016. It can be assumed this is having an impact on purchase multiples, which now exceed pre-crisis levels.
- According to a compilation of forecasts by Wilshire Associates, BNY Mellon, JP Morgan and Goldman Sachs, Private Equity is forecast to have a lower ten year forward return of 8.7% compared to the actual ten year return of 10.4%, as of 9/30/16. The ten year forecasted returns for Global Equities* and US Equities* are respectively, 7.5% and 6.9%.
- As the asset class matures, limited partners are targeting concentrated portfolios, with performance and criteria such as transparency and ESG, the primary filters
  - LPs are investing capital with proven, well known GPs that are primarily large asset managers . In 2014, according to Preqin, the 10 largest private equity funds accounted for 19% of overall fundraising in the year – in 2016, the percentage increased to 26%.
- CalPERS' influence in mitigating economic and governance issues has declined over time due to, mainly, LPs' willingness to allocate increasing amounts to Private Equity.

*Average forecasted return of the indices used by Wilshire, BNY Mellon, JP Morgan, and Goldman Sachs

Plan Allocations and Expected Returns

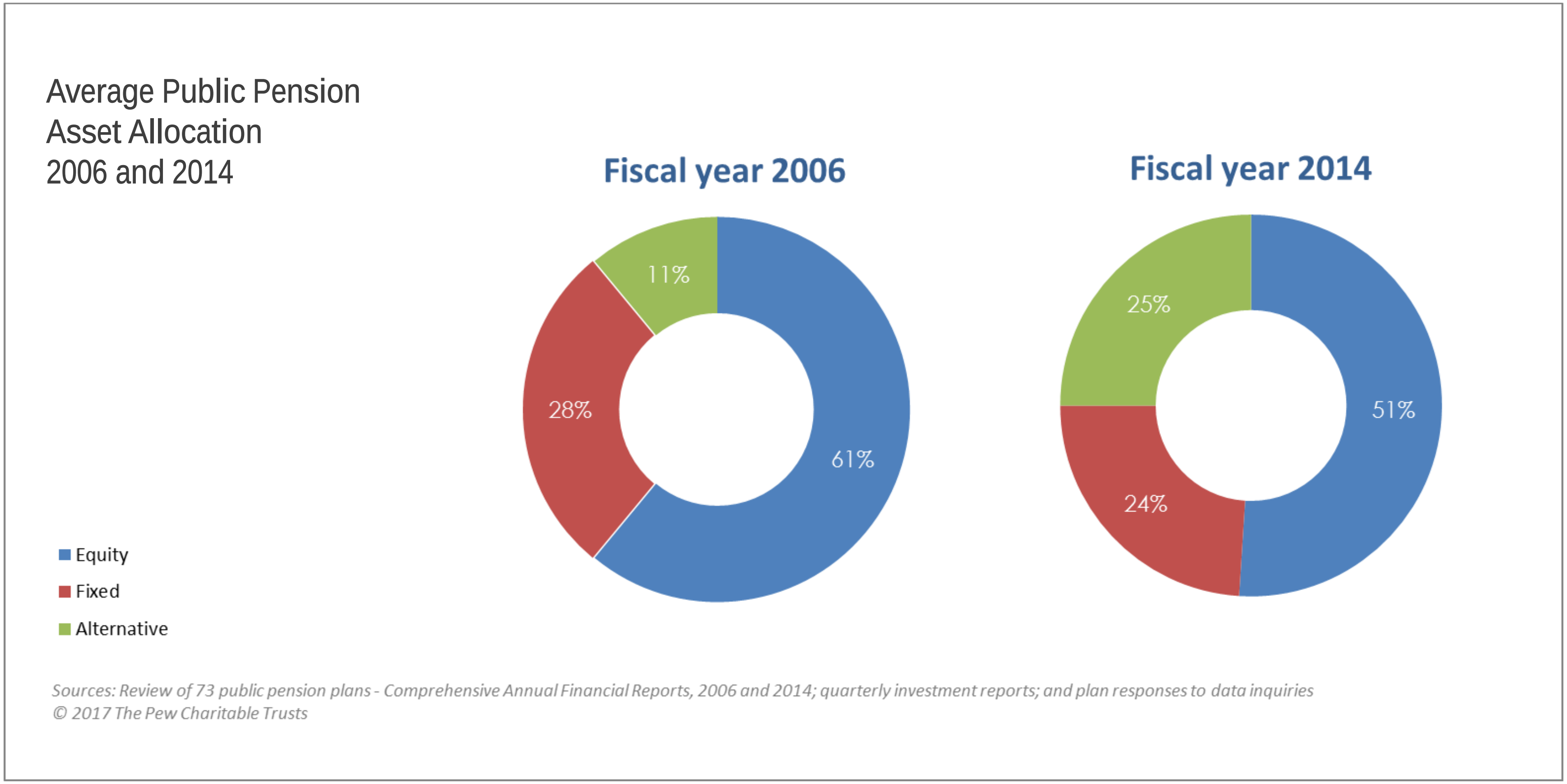


Sources: Analysis by The Pew Charitable Trusts of Comprehensive Annual Financial Reports, actuarial valuations, and related reports from states; U.S. Treasury data; and Center for Retirement Research at Boston College, Center for State and Local Government Excellence, and National Association od State Retirement Administrators, Public Plans Data

Risk Premium Increasing

- US Pension Plan assumed rates of return have remained relatively stable, as bond yields have declined.
- According to PEW Research of 73 public pension plans, to generate targeted returns, most Plans have a 70% - 80% allocation to equities and Alternative investments.

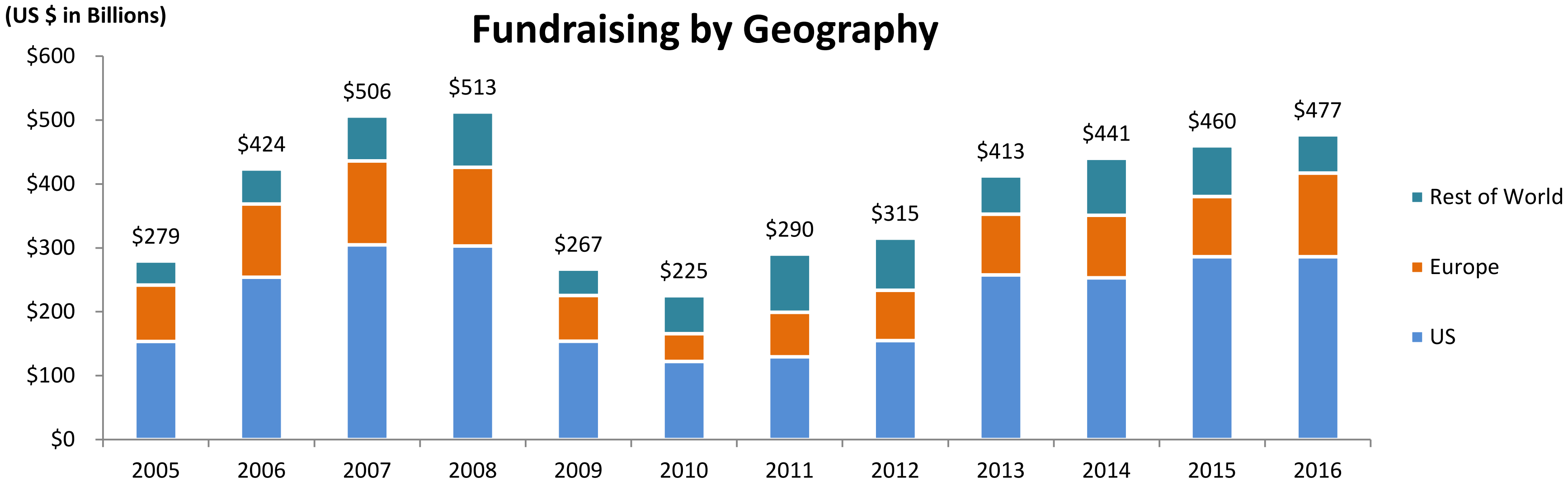
Alternatives Allocation



- Allocation to Alternatives has increased, enabling plans to maintain return assumptions.

2016 Global Private Equity Fundraising

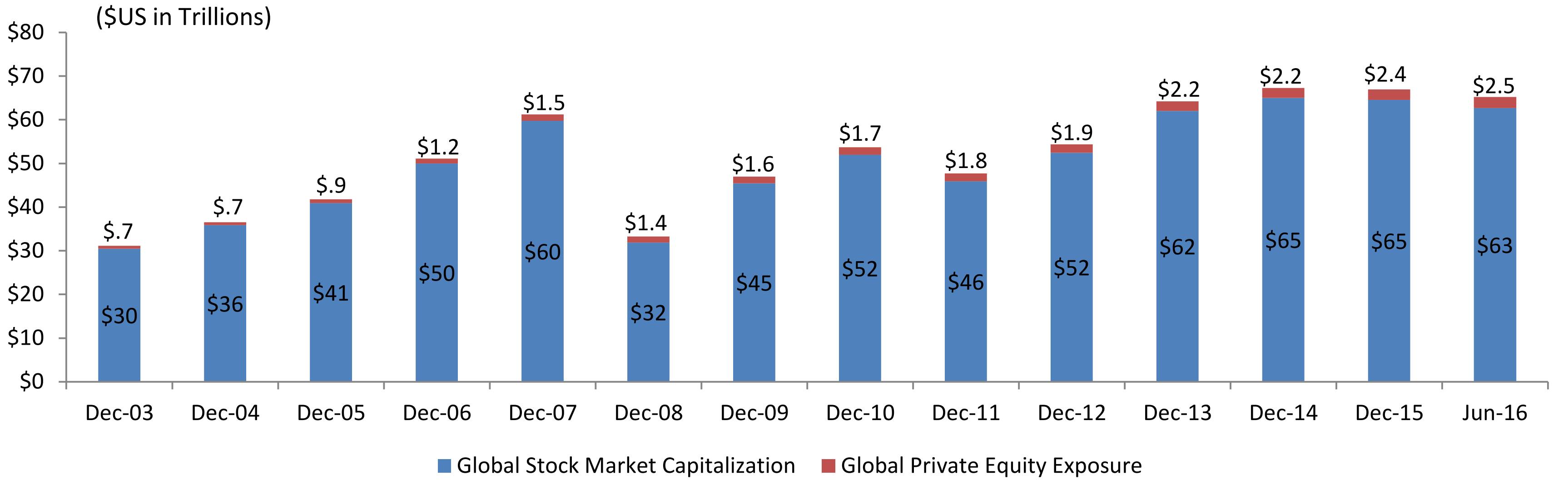
Through 12/31/16



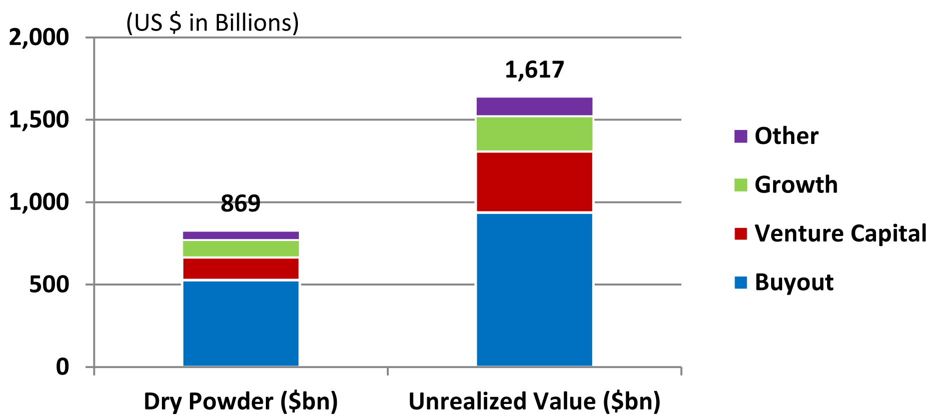
Source: Preqin.

- Capital raised in 2016 was approximately 7% below 2008 peak of $513 billion.
- European fundraising accounted for 27% of total global activity, highest since 2006.
- Share of ROW has dropped to under 13%, lowest since 2003, reflecting an increased appetite for developed market exposure.
- Buyout strategies accounted for almost half of all global fundraising.

Private Equity Assets Under Management as of 6/30/16



Private Equity Exposure Broken down by Strategy



- Private Equity share of global equity exposure has grown from 2.2% in 2003 to 4.0% in June 2016.
- The share of unrealized value in total AUM reached a peak in 2012 (71% of total) and has declined to 65% of total in 2016.
- Uncalled capital increased 56% to $869 billion between 2012 and 2016.

Source: Preqin Private Equity Online (As of June 2016)
Note: Assets Under Management defined as the uncalled capital commitments ("Dry Powder") plus the unrealized value of global private equity portfolio assets ("Aggregate Capital Invested")

CalPERS Size Relative to Other Large LPs

Rank	Limited Partners	Total Capital Committed in 2010-2014 (US $ in Billions)	% of Global Fundraising (2010-2014) (Preqin)
1	CPP Investment Board	$28.1	1.90%
2	AlpInvest Partners	19.7	1.30%
3	Hamilton Lane	18.7	1.20%
4	HarbourVest Partners	16.0	1.10%
5	Washington State Investment Board	14.4	1.00%
6	Goldman Sachs Asset Management	14.3	1.00%
7	CalPERS	11.7	1.00%
8	Pantheon	12.1	0.80%
9	La Caisse de Depot et Placement du Quebec	12.1	0.80%
10	Teachers Retirement System of Texas	11.6	0.80%
11	CalSTRS	10.7	0.70%
12	Florida State Board of Administration	10.2	0.70%
13	Oregon State Treasury	10.0	0.70%
14	Alaska Permanent Fund	7.9	0.50%
15	Virginia Retirement System	7.1	0.50%
	TOTAL	**$204.5**	**13.60%**

Source: PEI LP 50 report. Above ordered by % of Global Fundraising.

- Ranking excludes most Sovereign Wealth Funds ("SWFs"), many larger than CalPERS.

LP Concerns – Ten Years to Now

2007		2017	
Issue	**%**	**Issue**	**%**
Management fee levels and transaction fees on large funds are destroying alignment and interest between fund managers and investors	51%	Too much money is pursuing too few attractive opportunities across all areas of private equity	64%
The amount of leverage in the buyout market is unsustainable, and over the next two years credit problems will hurt performance of recent vintage funds	48%	The current private equity market feels like it is at the top of the cycle	56%
There is too much money available in the large buyout market and this will dramatically impact future returns	39%	Purchase price multiples in middle-market buyouts are too high and threaten future returns	45%
Private equity is most effective as a niche market and too much money is being raised in all sectors of private equity	35%	Purchase price multiples in large-market buyouts are too high and threaten future returns	26%
Recapitalizations are boosting IRRs temporarily, but adding to fund risk by re-levering companies	30%	Large firms in the market are becoming generalized asset managers and are moving away from key investment strengths	26%

Source: Probitas Partners' Private Equity Institutional Investor Trends for 2007 Survey and 2017 Survey

- Valuations and available capital, a consistent theme.
- Transaction fee offsets have improved according to 2017 ILPA survey – 93% of funds reduce the management fee by the transaction fees received by the GP.

Investment Focus

2007		2017	
Sector	**%**	**Sector**	**%**
U.S Middle-Market Buyouts	49%	U.S. Middle-Market Buyouts ($500 million to $2.5 billion)	77%
European Middle-Market Buyouts	42%	U.S Small-Market Buyouts (<$500 million)	56%
U.S Venture Capital	34%	European Middle-Market Buyouts - Country or Region-Focused	54%
Distressed Debt	30%	U.S. Venture Capital	44%
Asian Funds	25%	Growth Capital Funds - Developed Markets	43%

Source: Probitas Partners' Private Equity Institutional Investor Trends for 2007 Survey and 2017 Survey

- Wary of large asset managers and fund sizes, Limited Partners are emphasizing the Middle Market.

- While valuations remain a concern, unlike 2007, distressed debt strategies are not a focus.

Increasing Emphasis on Environmental, Social & Governance (‘ESG”) Policies

- According to a 2014 PWC survey, 82% of global institutional investors considered sustainability information as part of their investment process.

- Larger PE firms are leading the way with designated sustainability staff and annual sustainability reports. Several smaller PE firms are working towards creating an ESG policy.

- Private Equity Managers are increasingly adopting ESG policies.

- Recent CalPERS Survey of its existing PE managers shows 17 of 92 are UNPRI signatories and 38 of 92 have a formal ESG policy.

Industry Advancement of LP Interests

Early 1990s Formation of Institutional Limited Partners Association (ILPA), an industry coalition focused on improving PE terms and transparency

1996 Mercer Report (Key Terms and Conditions for Private Equity Investing) helps standardize industry practices, educate investors and better align interest of GPs and LPs

Late 1990s Industry experiences first co-investments, typically done with no management fees or carried interest paid to GPs

2000 CalPERS helped formalize the Institutional Limited Partners Association (ILPA)

2009 ILPA Principles Committee authors Private Equity Principles

2011 ILPA develops a Call and Distribution Notice template

2016 ILPA publishes a fee, expense, and reimbursement disclosure template

1990 2016

Valuations and Capital Markets

Capital Markets Summary

- As private equity has become more institutionalized and the fund sizes larger, the size of companies targeted, as defined by enterprise value, has also increased.

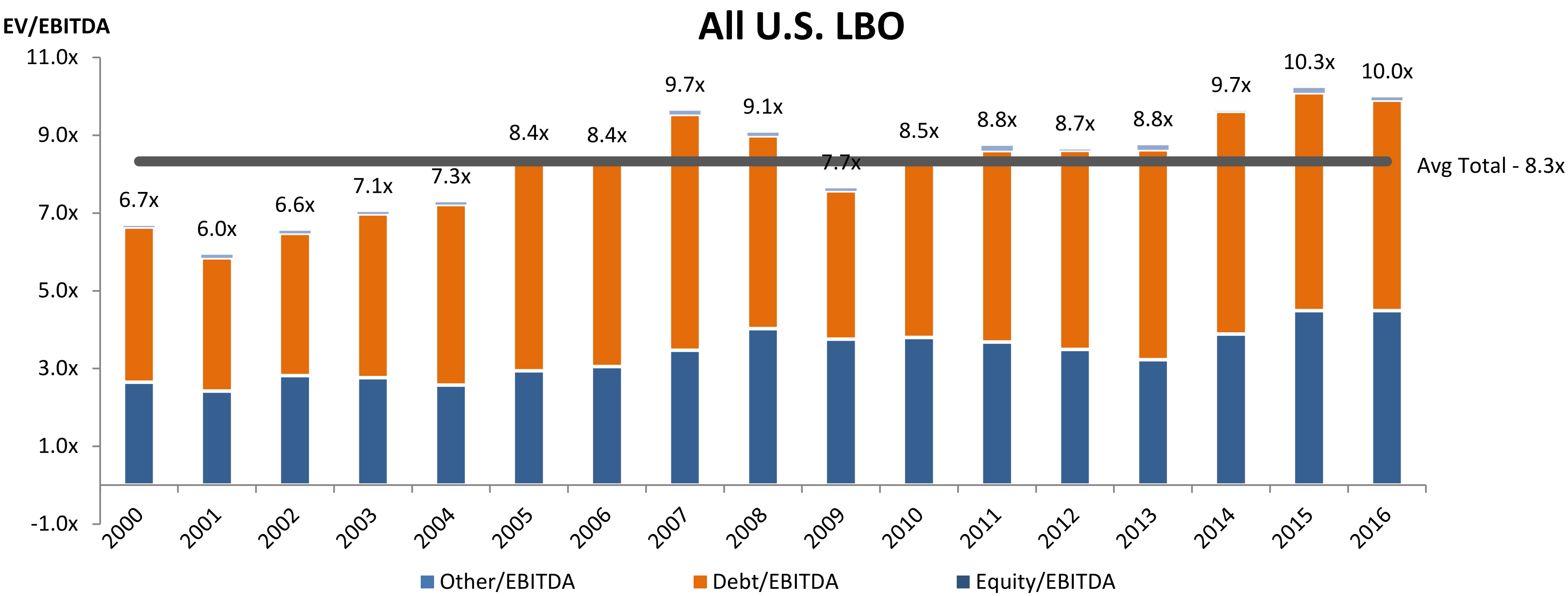
- Valuations, with greater interest in the asset class and a strong public equity market, have also increased. In addition to increased interest in the asset class, distributions have meaningfully surpassed contributions, “forcing” LPs to increase commitments and maintain their PE allocation.

- While financing conditions remain benign, the level of leverage utilized relative to the financial crisis, is less. None-the-less, should interest rates rise meaningfully and/or the Capital Markets become constrained, valuations and returns will be negatively impacted, all else being equal. A secular rise in long term rates will have a longer, lasting negative impact.

- High valuations and easy financing leave little room for error as PE firms still strive for net mid-teens returns.

2016 Purchase Price Multiples in the U.S.

Through 12/31/16



- Steady increase in purchase price multiples from 2012 through 2015, coupled with relative increase in equity multiples and decrease in average debt multiples.

Source: S&P. Represents US only

Note: Debt/EBITDA multiple listed here is based on Sources & Uses, while the analysis in the "Leverage Multiples" is based on Capitalization. This results in varying results. Other includes preferred and hybrid securities.

Venture Capital Trends

Venture Capital Trends

- While shy of the 2000 record of 463 funds and $77 billion raised, in 2016 Venture Capital fund raising continued to impress with 382 funds closing and $55 billion in capital raised. Investors are seeking more opportunities in Asia, accounting for the marginal increase in capital raised.

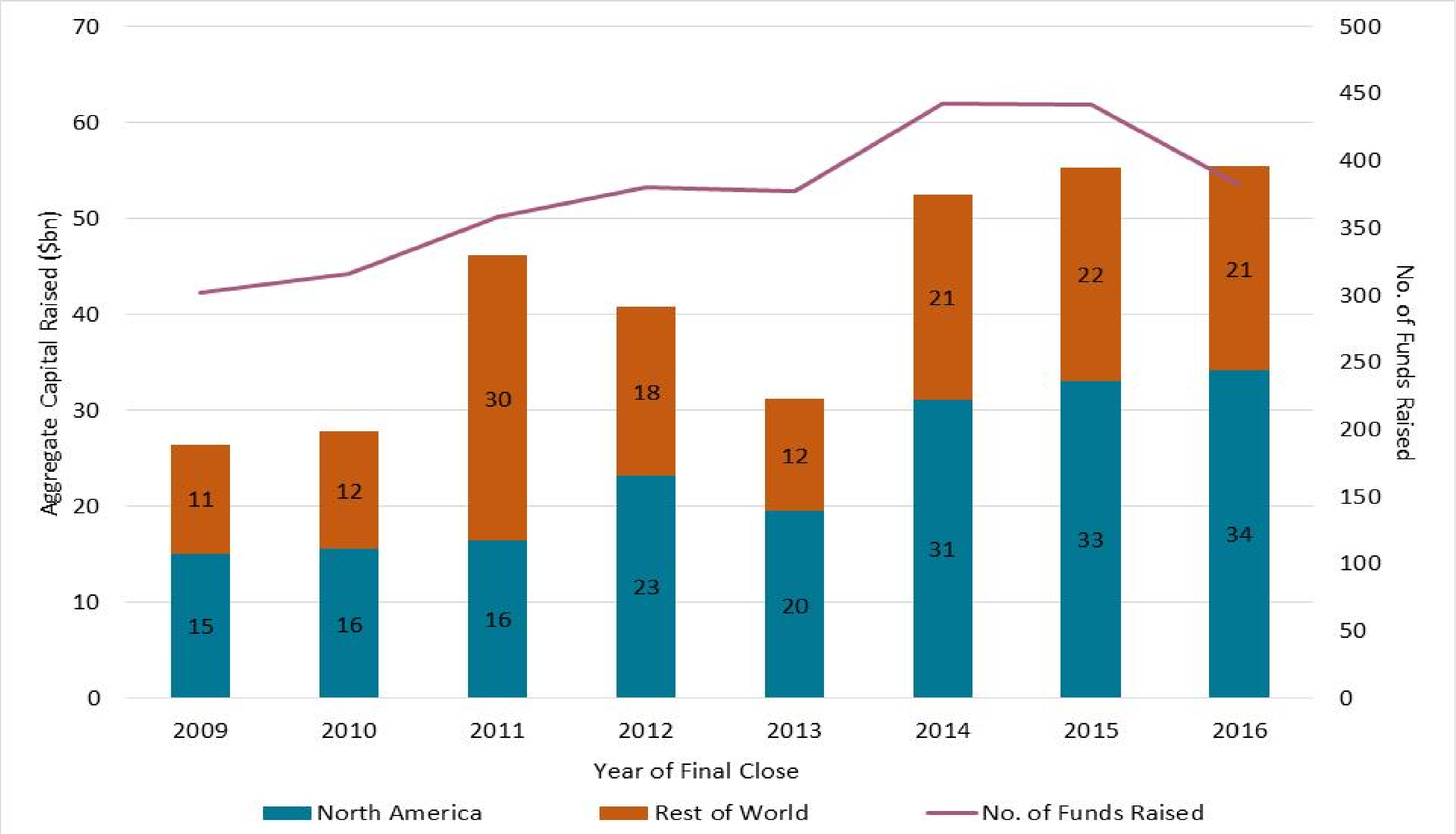
- According to Prequin's 2016 survey of LPs, 28% viewed venture capital as providing the best investment opportunities, second only to small-mid buyouts at 58%.

- Valuations continue to rise as reported by Prequin, with the average deal size 2.5x since 2013 for Series B rounds and higher.

- Returns have improved since the nadir of the early 2000's, however the returns of the mid to late 1990's for the venture class as a whole, have yet to recover. Return profile continues to demonstrate, commitments should only be reserved for top quartile managers.

- Technology, Healthcare and Telecom/Media continue to dominate VC sector activity.

VC Fund Raising



Source: Preqin Private Equity Online

- Fund raising remains strong, driven by activity in the U.S. and Asia.

VC Returns

U.S. Venture Capital Returns Ending 12/31/2016	Upper Quartile Returns	Median Returns	Lower Quartile Returns
5 - Year	18.2%	5.8%	-6.1%
10 - Year	14.5%	4.6%	-4.9%
15 - Year	11.6%	1.7%	-7.8%
20 - Year	18.6%	6.2%	-4.0%
25 - Year	19.6%	7.5%	-2.6%

Source: Cambridge Associates

U.S. Venture Capital Returns Ending 12/31/2016	Early-Stage Pooled Returns	Late/Expansion Stage Pooled Returns	Multi-Stage Pooled Returns
5 - Year	15.2%	10.4%	13.3%
10 - Year	9.8%	10.0%	8.5%
15 - Year	6.1%	8.4%	7.7%
20 - Year	57.7%	9.4%	9.8%
25 - Year	35.2%	11.9%	13.7%

Source: Cambridge Associates

- Attractive returns remain concentrated with the top quartile managers.
  - Meaningful return dispersion between top and median quartile managers.
- Early stage pooled returns generating attractive returns over a lengthy period – high volatility but less dependent on Market timing.

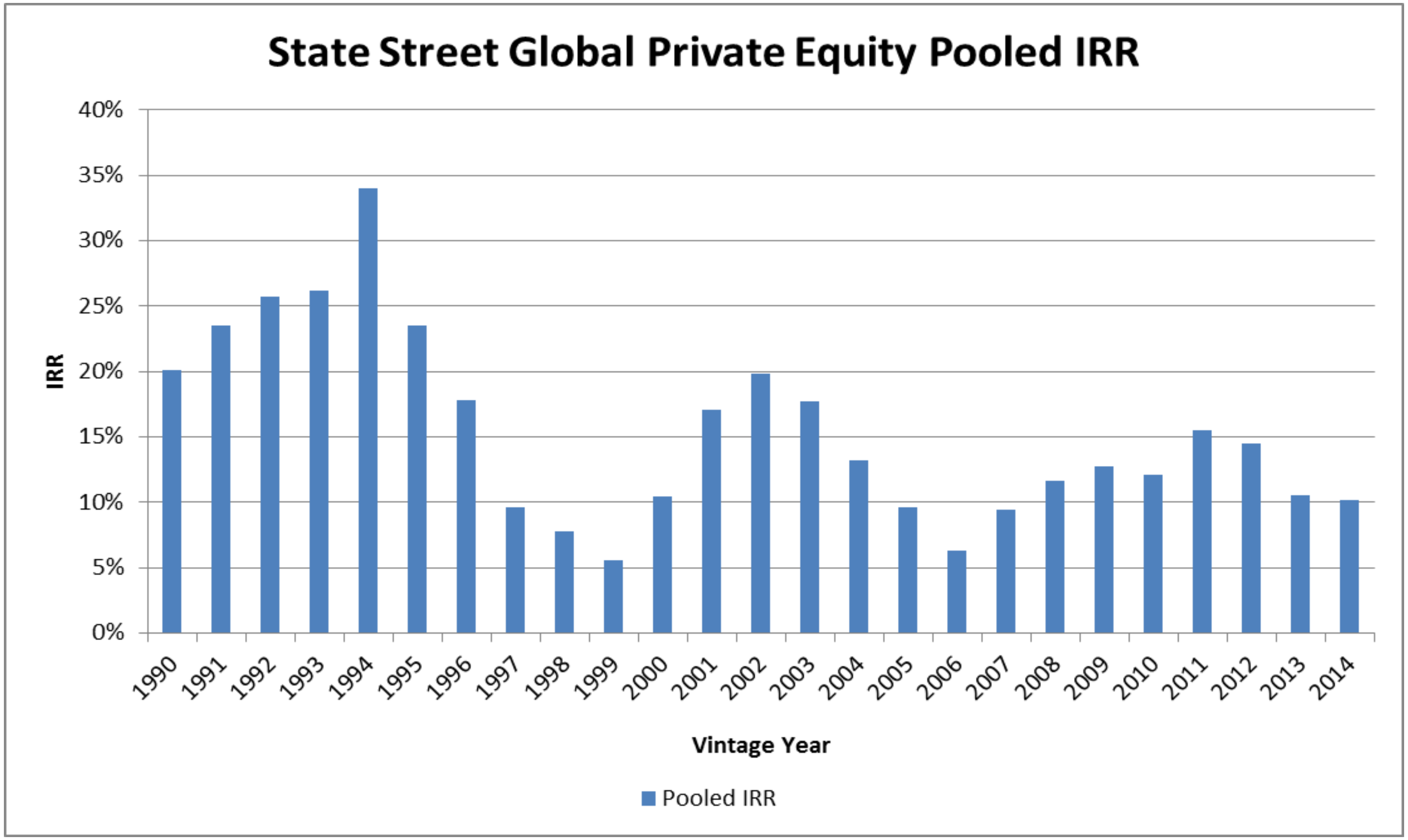
Historic Returns and Market Expectations

Performance Summary

- Private equity is no longer a cottage industry – greater inflow into the asset class is impacting returns on an absolute basis.

- Long term private equity performance, still accretive relative to public indices.
  - Cambridge Associates Global All PE Benchmark out-pacing the public indices over the ten year period, through 9/30/16.
  - Cambridge Associates US PE Index out-performing the public market equivalent indices over the long-term (ten years and longer).

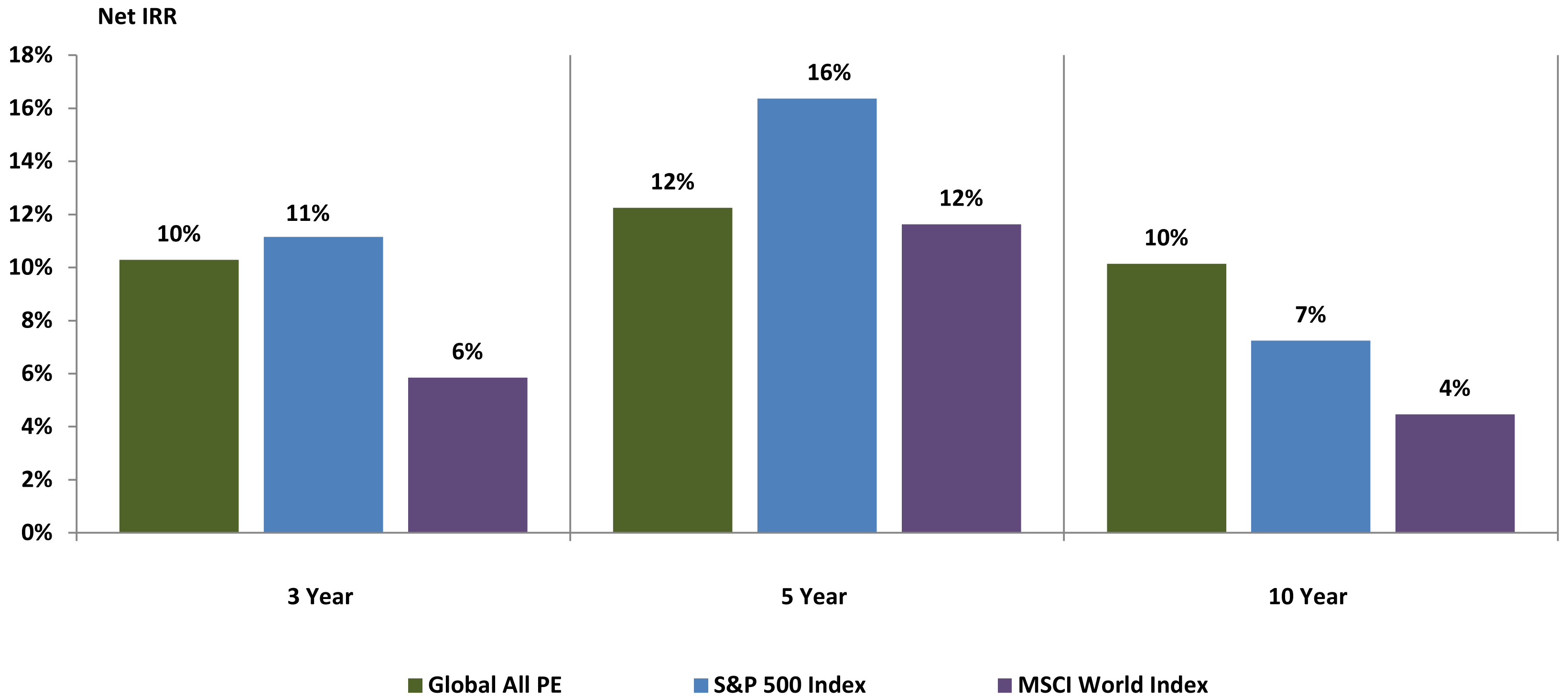
Vintage Year Private Equity Returns



Source: State Street Global Private Equity Quartile Chart as of 9/30/2016

- Similar to the public equity market, private equity returns are cyclical.
- Since inception private equity pooled IRRs, on an absolute basis, have declined.

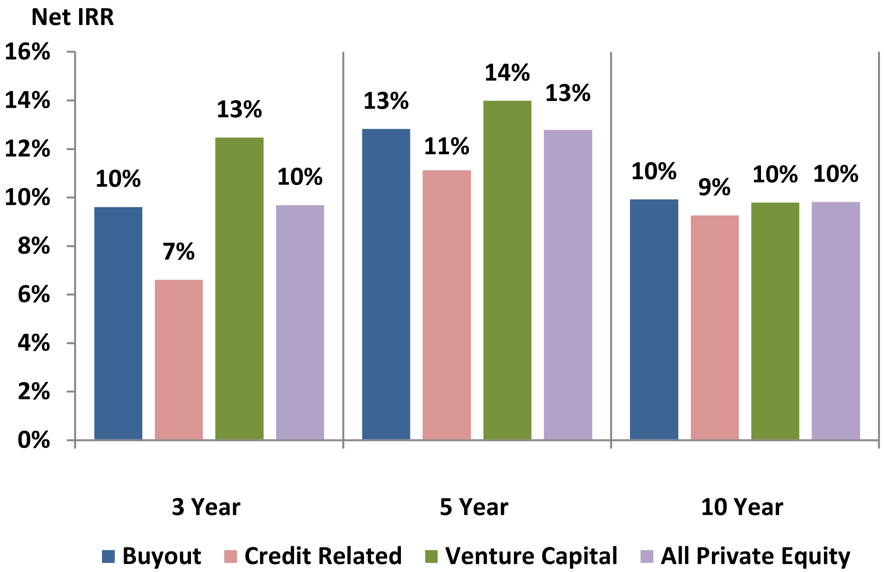
PE Returns Compared to Public Market Returns



- Benchmarks as proxy for PE returns:
  - S&P 500 was the top performer in the 3 and 5-year periods.
  - Global All PE outpacing public indices in the long-term.

Source: Cambridge Associates, as of 9/30/2016

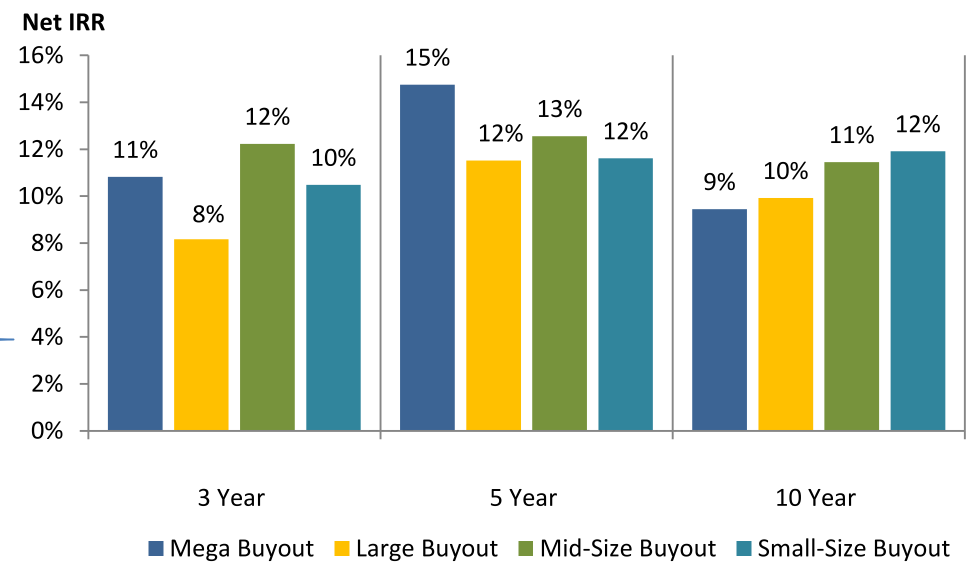
Returns for Different Strategies within PE



- While individual PE strategies exhibit short term relative out / under performance, over longer periods of time PE strategies tend to converge.

- Large buyout returns have been lagging in the 3 and 5-year period.

- Mid and Small-Size buyout returns have been highest in the 10-year period.



Source: State Street, as of 12/31/2016