Private Equity Workshop Materials

CalPERS Investment Office

November 16, 2015

Workshop Outline

I. **Benefits and Drawbacks of Private Equity in the CalPERS Portfolio**

II. **Brief Review of Private Equity Industry and CalPERS' Role**

III. **Key Legal Terms and Conditions**

IV. **Examples of Waterfall Accounting**

V. **Investment Office 2020 Vision**

Introduction- Key Characteristics of Private Equity

Benefit	Characteristic	Challenge
• Higher return profile than global equity • Expansion of investment universe, not available through public markets	**Return**	• Wide dispersion of manager performance • Funds are "blind pools" • Manager selection and persistence drives performance
• Less than 100% correlated with global equity	**Risk**	• Infrequent and estimated valuations • Determining appropriate benchmark
• Investing in long term strategies	**Long term commitment**	• Controlling exposure • Expensive secondary market • Investment timing dependent on manager fundraising
• Hurdle rates may align interest with value creation	**Cost**	• Complex, higher, and non-transparent fees • High gross to net spreads
• Control investors may receive return premium	**Complexity**	• Multiple dimensions of skills needed (i.e., manager selection, legal structure, accounting) • Challenge to predict cash flows • Idiosyncratic contracts- "buyer beware"

Introduction- Key Topic Points to be Covered Today

Topic	Page(s)
Risk	3, 11-15, 20, 24, 25, 27, 30, 31, 34, 35, 51-56, 62, 75, 77, 79, 81, 83, 92, 96, 103
Benchmarking	16
Alignment vs. Conflicts of Interest between LPs and GPs	20, 41, 42, 44, 45, 49-56, 62-64, 68-70, 75, 79, 83
Management Fee Waivers, Fee Offsets, Portfolio Company Fees, Transparency	53, 54, 56, 91, 92, 102
Economic Consequences of Waivers, Offsets and Other Fees	70, 75-81, 84
Gross to Net Fee Burden	72, 73, 85, 99

I. Benefits and Drawbacks of Private Equity in the CalPERS Portfolio

Objectives for Section I

- To outline Private Equity's role in CalPERS' portfolio
- To review historical performance of CalPERS Private Equity compared to other asset classes
- To review risk characteristics
- To discuss Asset Allocation challenges

Role of Private Equity

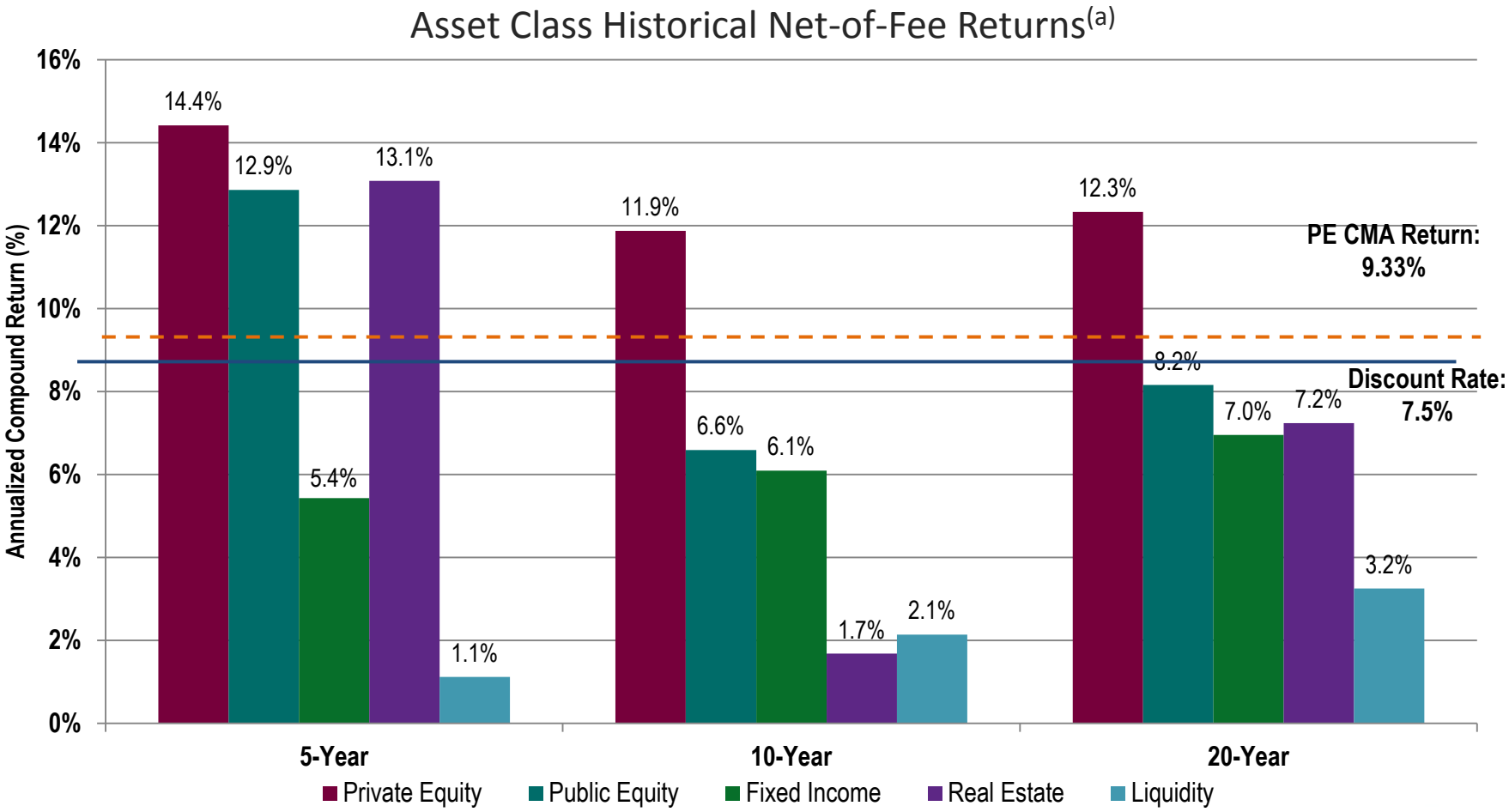
Role

- Private Equity (PE) allocations are a means of enhancing equity returns through a value added approach to investment management of a diverse set of portfolio companies and to capture the illiquidity premium. The major driver for returns is appreciation, with negligible cash yield.

	Capital Market Assumptions		
	Expected Compound Return	**Volatility**	**Cash Yield**
CalPERS[(a)]	9.33%	25.00%	0.00%
PCA[(b)]	8.80%	26.00%	0.00%
Wilshire[(c)]	9.65%	27.50%	0.00%

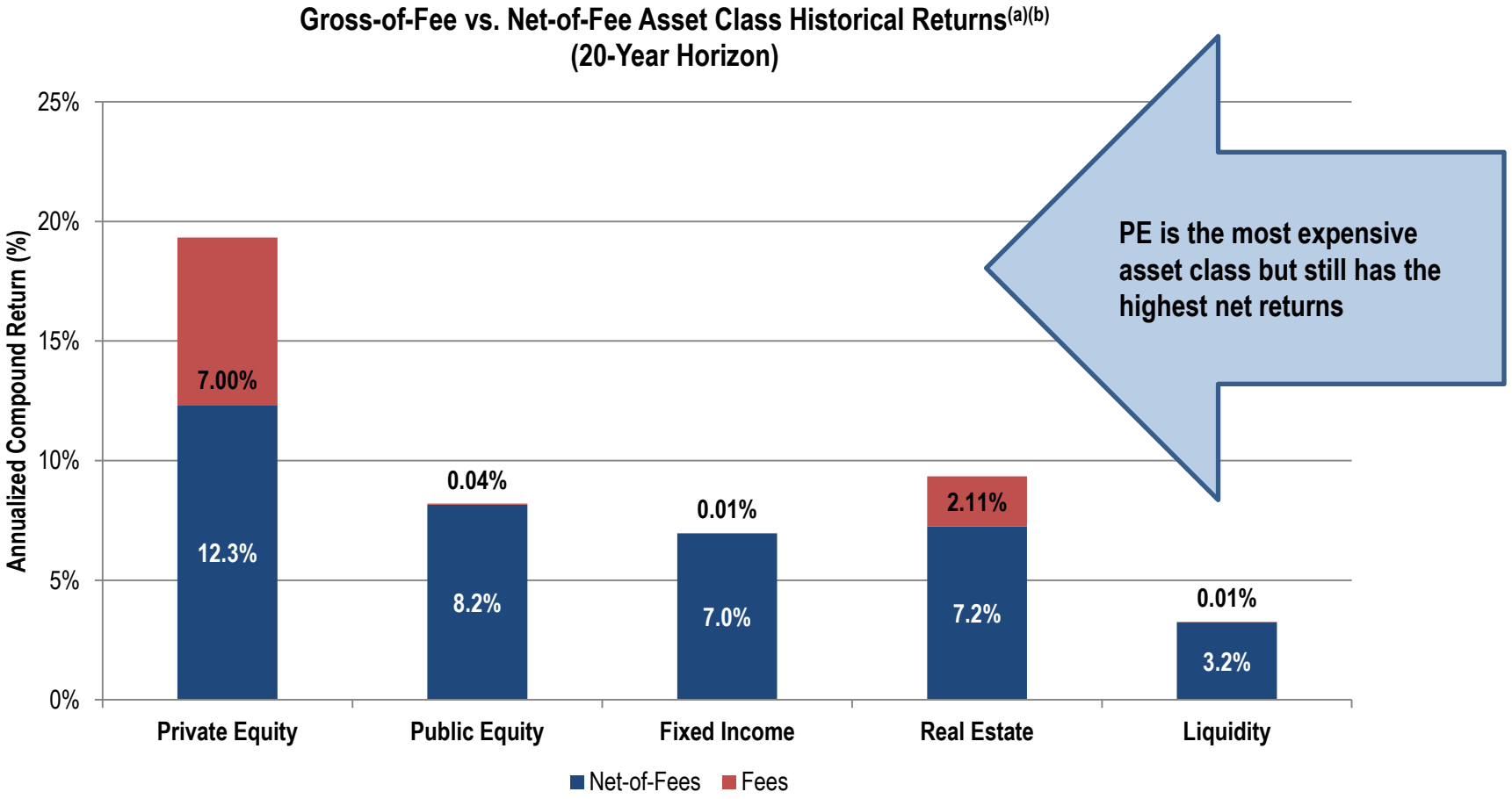
(a) From 2013 Asset Liability Management (ALM) Workshop
(b) Current PCA Assumptions
(c) Current Wilshire Assumptions

CalPERS' Relative Returns of Private Equity



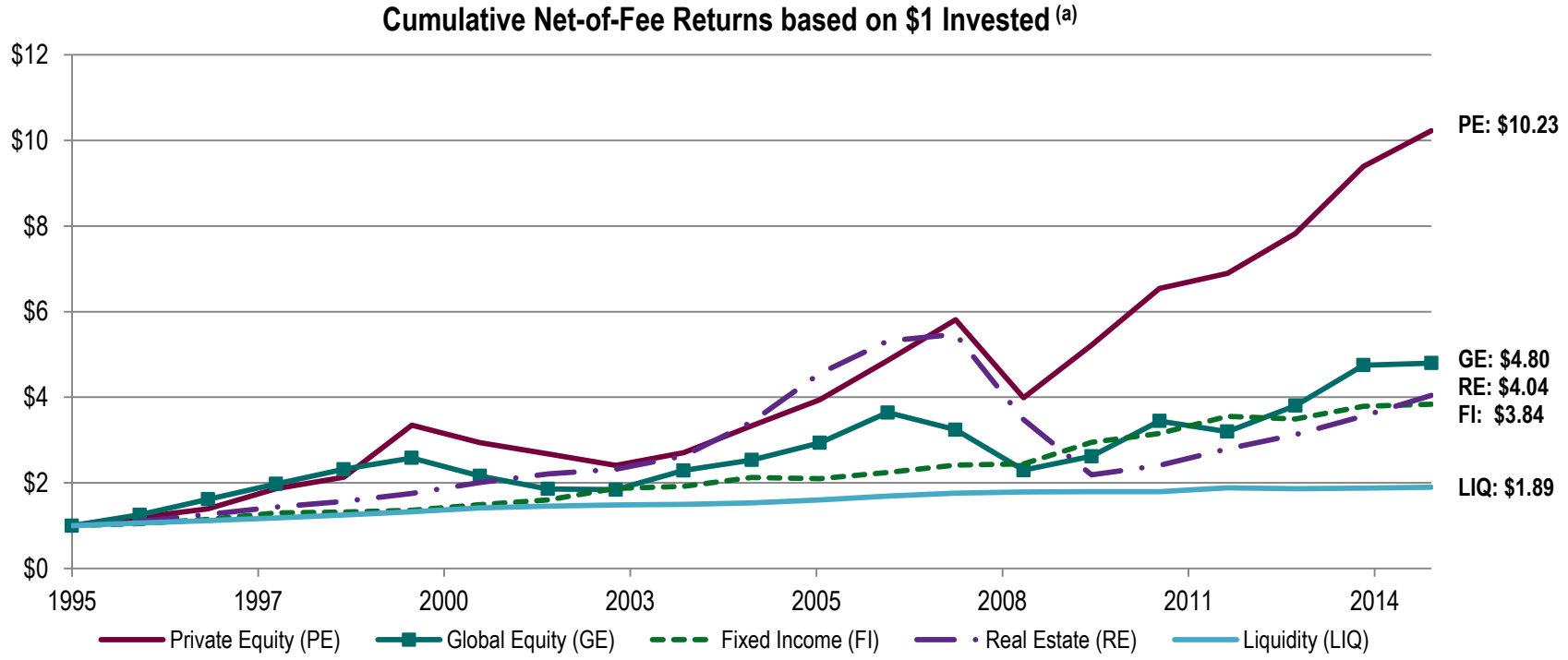
(a) Data source: State Street as of 6/30/2015; Inflation-sensitive, Infrastructure and Forestland asset classes were excluded due to data limitations

Asset Class Returns - Gross vs. Net-of-Fees



(a) Private Equity gross-of-fee return includes an estimated 7% fee; For all other asset classes, fee equals realized difference between gross-of-fee and net-of-fee returns.
(b) Source: StateStreet. Based on 20 year data as of June 30, 2015

Value Added From Private Equity



- Other estimates of value added from Private Equity since inception:

	Private Equity Value Added(b)
Public Market Equivalent (PME)	$16.8 billion
Return Difference Approach	$11.6 billion

CalPERS Investment Office Private Equity

(a) Source: StateStreet – Based on annual data for 20 fiscal years ending June 30, 2015; Inflation-sensitive, Infrastructure and Forestland asset classes were excluded due to data limitations

(b) As of June 30, 2015. Reference portfolio used is the Global Equity portfolio. Details of the methodology are in the appendix

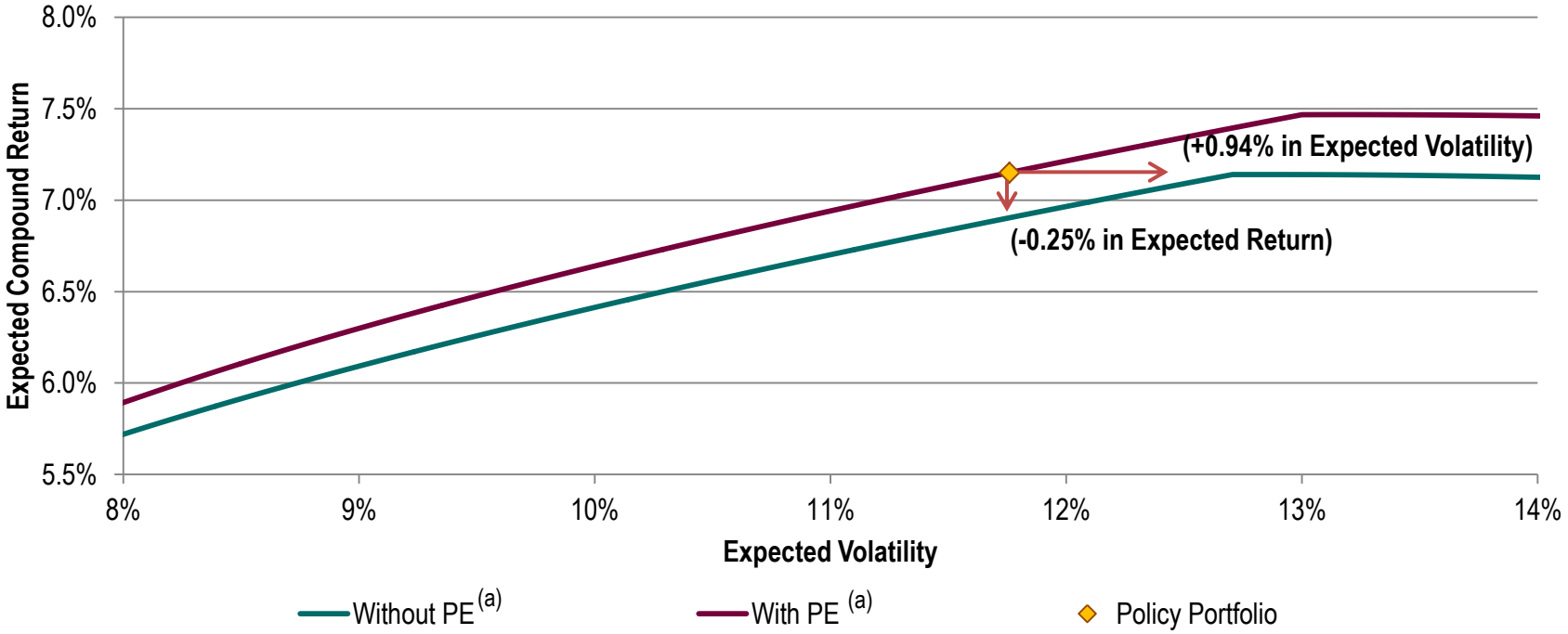
Diversification Benefits of Private Equity

- Lower observed volatility than expected
- Imperfect correlation with Global Equity

Portfolio	Observed Volatility			Observed Correlation to PE		
	2013 CMA	Observed	Difference	2013 CMA	Observed[a]	Difference
Private Equity[a]	25.0%	19.0%	-6.0%	1.00	1.00	—
Global Equity[b]	17.4%	15.9%	-1.5%	0.73	0.69	-0.04
Fixed Income[b]	7.0%	5.5%	-1.5%	0.12	0.06[c]	-0.06
Real Estate[a]	14.0%	17.1%	3.1%	0.38	0.28[c]	-0.10
Liquidity[b]	3.0%	1.0%	-2.0%	0.00	0.17[c]	0.17

(a) Historical data is based on the annual fiscal year-end returns net of manager fees from StateStreet for 20 years ending June 2015 (20 periods); Inflation-sensitive, Infrastructure and Forestland asset classes were excluded due to data limitations.
(b) Historical data is based on monthly fiscal year-end return s net of manager fees from StateStreet for 20 years ending June 2015 (240 periods)
(c) Not statistically significant at 95% confidence level

Efficient Frontier With and Without PE



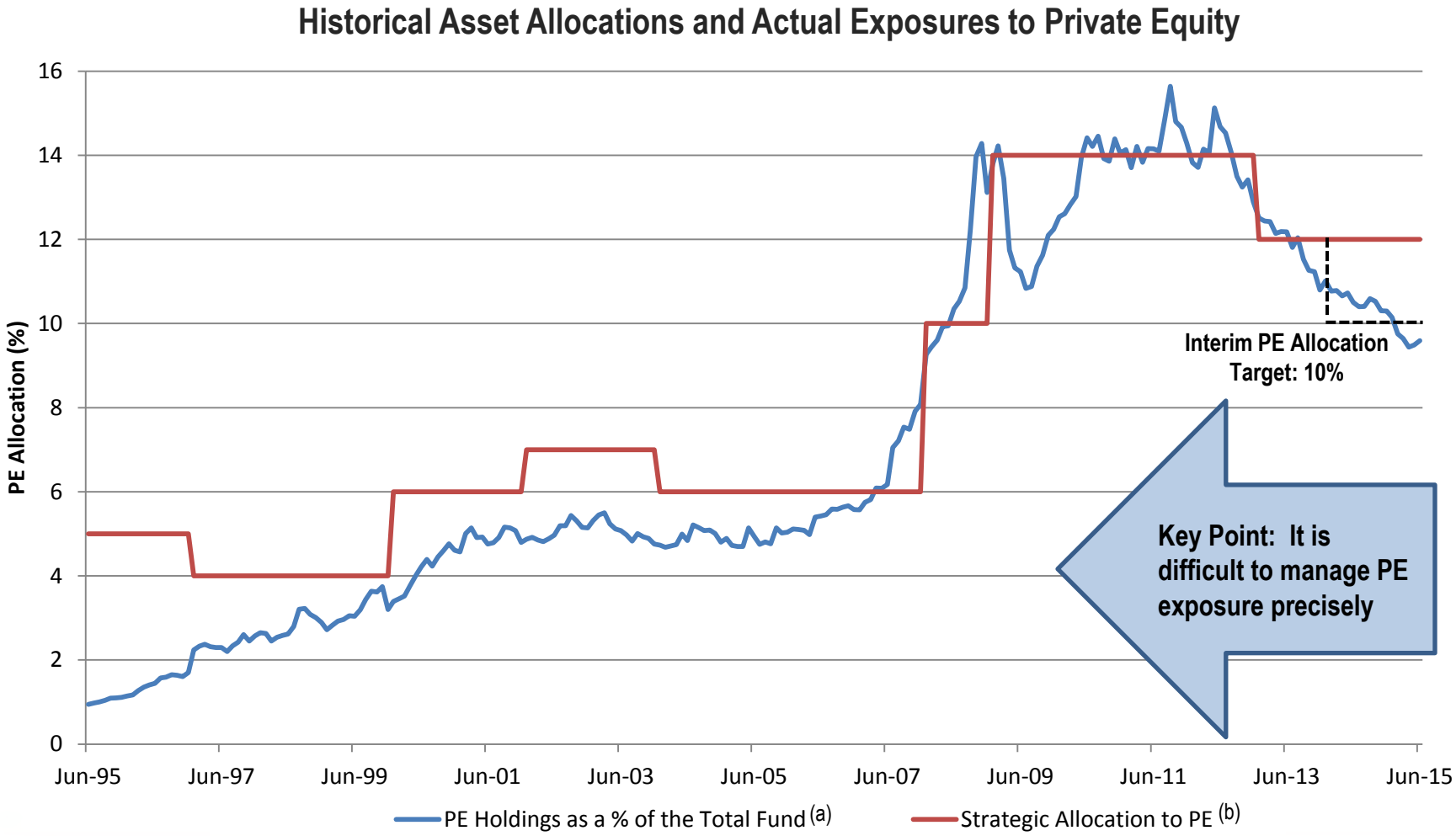
- Maintaining similar expected return, increases the allocation to Global Equity by 20% and the volatility by 0.94%
- Maintaining similar portfolio volatility, increases the allocation to Global Equity by 14% and reduces the expected return by 0.25%

(a) Capital market assumptions are from the 2013 ALM Workshop

Asset Allocation Challenges- Private Equity

Challenge	Initiative to Address Challenge
• Controlling Private Equity Exposure	• Liquid Public Market Proxy (Roadmap Initiative 3) ○ Will require other risks: leverage, derivatives, etc.
• Determining Appropriate Benchmark	• Role of Private Markets (Roadmap Initiative 7) • Benchmark evaluation and discussion (Roadmap Initiative 2)
• Predicting Cash Flows	• Liquidity – Operations (Roadmap Initiative 35)

Controlling Private Equity Exposure

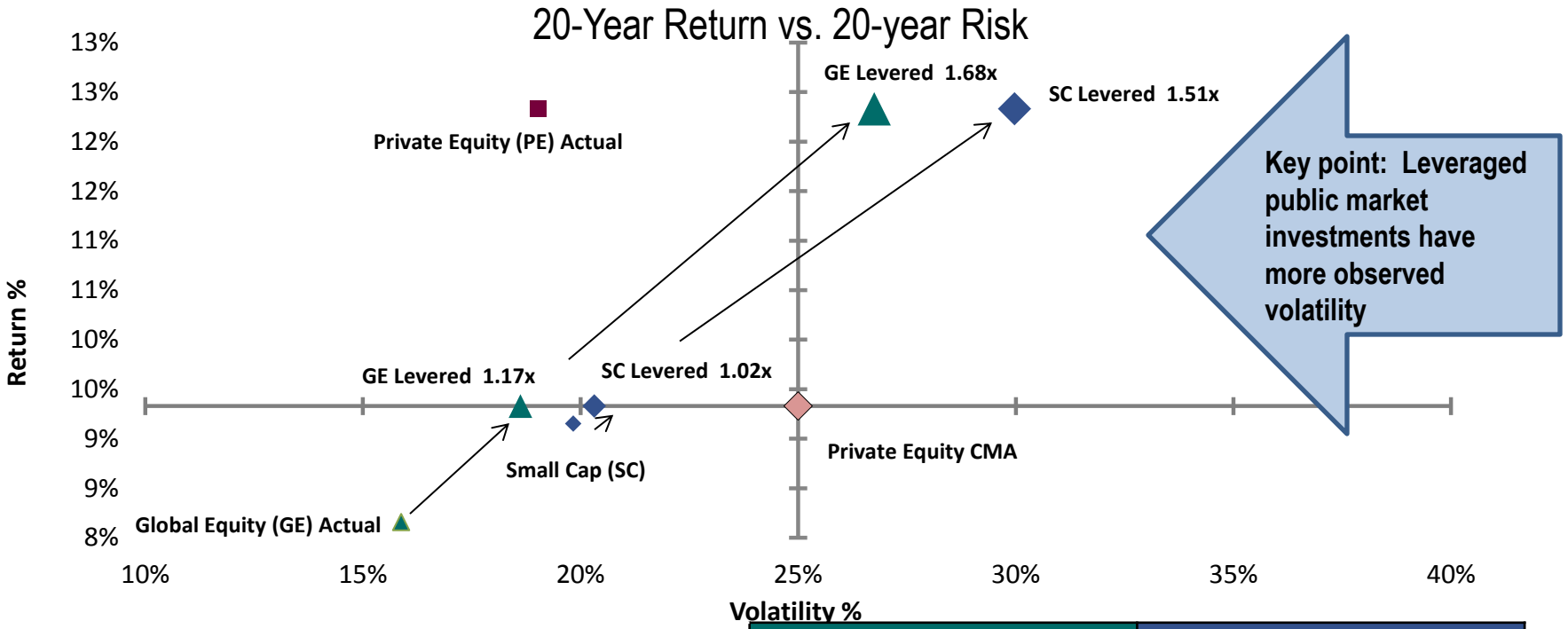


CalPERS Investment Office Private Equity

(a) Source: StateStreet – Monthly weight of Private Equity as a percentage of the PERF for 20 years ending June 2015

(b) Source: 2010 and 2013 ALM workshop material

Alternatives to Private Equity



	Global Equity			Small Cap[(c)]		
	Leverage	Return	Volatility	Leverage	Return	Volatility
Actual	1x	8.2%	15.9%	1x	9.2%	19.8%
Same Return Level as PE CMA (Return = 9.33%; Volatility = 25%)	1.17x	9.33%	18.6%	1.02x	9.33%	20.3%
Same Return Level as PE Actual (Return = 12.3%; Volatility = 19%)	1.68x	12.3%	26.8%	1.51x	12.3%	30.0%

*Small Cap uses Russell 2000 Total Return Index as proxy

Determining Appropriate Benchmark

- PE should generate a premium over long term equity returns to compensate for the challenges.
  - Public market index plus a spread reflects the opportunity cost over the long term.
  - Over a shorter horizon, public market indices are substantially more volatile[(a)].

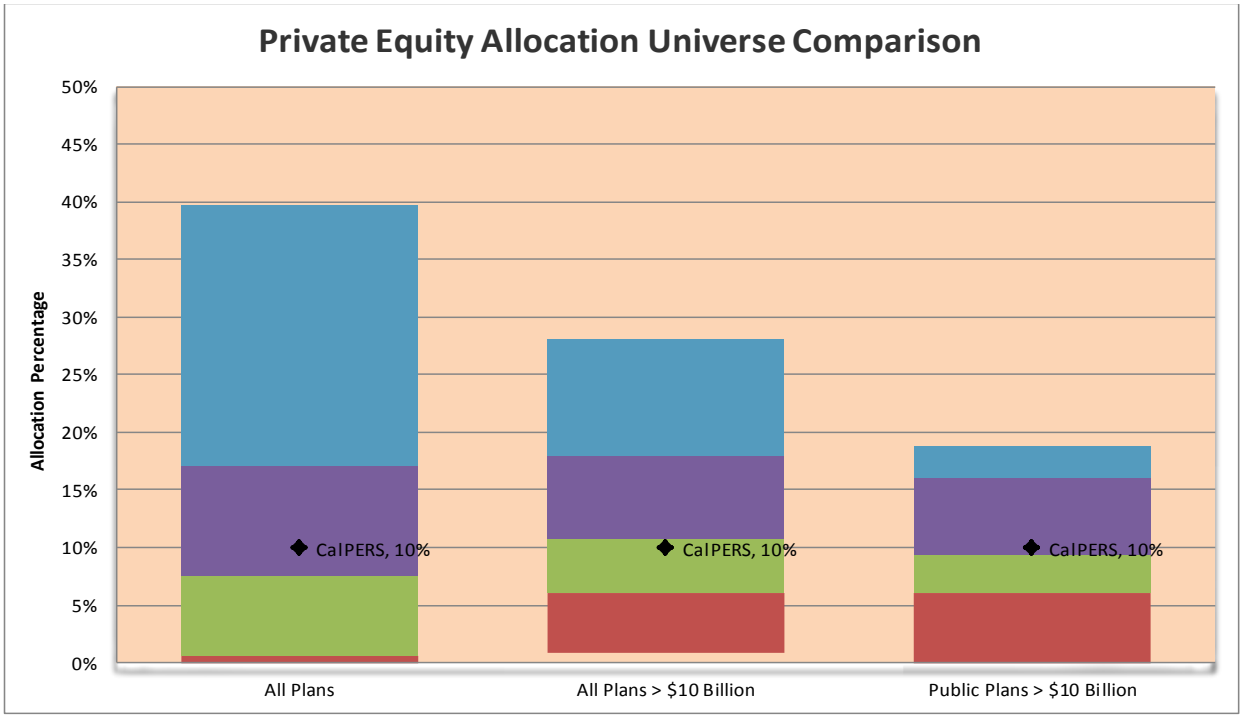
- Differences in the Public and Private Equity return characteristics have implications in assessing:
  - The short-term performance of the PE program
  - The performance of staff
  - The tracking error of the Total Fund

[(a)]Towers Watson, "Investing In Private Markets: The Right Strategy, the right geography, the right manager," 2012

Conclusion

- Private Equity has important attributes
  - ✓ Has improved the risk adjusted return profile of the total fund
  - ✓ Estimate more than $11 Billion in value added from Private Equity since inception
- Creates challenges that CalPERS is working to address
  - ✓ Most expensive asset class
  - ✓ Public Market Proxy
  - ✓ Role of Private Markets/ Benchmark evaluation and discussion
  - ✓ Liquidity – Operations
- No obvious substitutes

Wilshire's Peer Group Allocations to Private Equity



% Allocation to Private Equity			
Percentile	**All Plans**	**All Plans > $10 Billion**	**Public Plans > $10 Billion**
5th	39.65	28.03	18.77
25th	17.10	17.98	16.07
Median	7.56	10.75	9.36
75th	0.60	6.08	6.08
95th	0.00	0.88	0.00
# Observation	213	50	12
Min	0.00	0.00	0.00
Max	72.03	35.2	19.93
Mean	11.76	12.27	9.07
Std Dev	13.9	8.65	6.55

Source: Wilshire Trust Universe Comparison Service

Private Equity and the Public Pension Investor

Josh Lerner
Harvard Business School

My research has highlighted both the potential and challenges of private equity

This presentation

1. Measuring the performance of private equity.
2. Measuring the performance of different classes of LPs.
   a. The factors behind the changing patterns.
   b. The implications of these changing patterns.

Appendix: The viability of going it alone.

Measuring the performance of private equity

Buyout funds outperformed public markets, and have increasing outperformance

Public market equivalents compare proceeds generated by investing in the private equity fund with those from investing in a public market index.

- If ratio of proceeds from PE investments to public investment is > 1, PE is considered superior.

	Buyout Funds PMEs			
	Funds	Average	Median	Wtd. Avg.
Average 2000s	411	1.27	1.25	1.29
Average 1990s	157	1.27	1.17	1.34
Average 1980s	30	1.04	1.03	1.11

Note: Private equity returns in this study are compared to equivalently timed investments in the S&P 500.

Source: Robert S. Harris, Tim Jenkinson, and Steven Kaplan, "Private Equity Performance: What Do We Know?" *Journal of Finance* 69 (5), October 2014.

But PMEs only solve part of the "returns" problem

- Private equity funds' risk may differ from public markets.
- Risks may vary across venture and buyout and geographies.
- Risk may vary across time.
  - PMEs calculated using the S&P 500 index implicitly assume a beta of one.
- It is important therefore to look at other measures of (explicitly) risk-adjusted returns:
  - Robinson and Sensoy (2013) and subsequent authors use other benchmarks to estimate the effects of alternative betas.
  - Axelson et al. (2013) does more complex, "cutting edge" adjustment:
    - Both continue to find outperformance.

Note: Some theory work (Sorensen and Jagannathan (2013)) *does* suggest that PMEs are robust irrespective of risk, but research on this topic is limited.

Sources: David T. Robinson and Berk A. Sensoy, "Cyclicality, Performance Measurement, and Cash Flow Liquidity in Private Equity," Working Paper No. 2010-03-021, Fisher College of Business, September 2013; Ulf Axelson, Morten Sorensen, and Per Stromberg, "The Alpha and Beta of Private Equity," Unpublished Working Paper, London School of Economics, 2013; Morten Sorensen and Ravi Jagannathan, "The Public Market Equivalent and Private Equity Performance," *Financial Analysts Journal*, July 15, 2015.

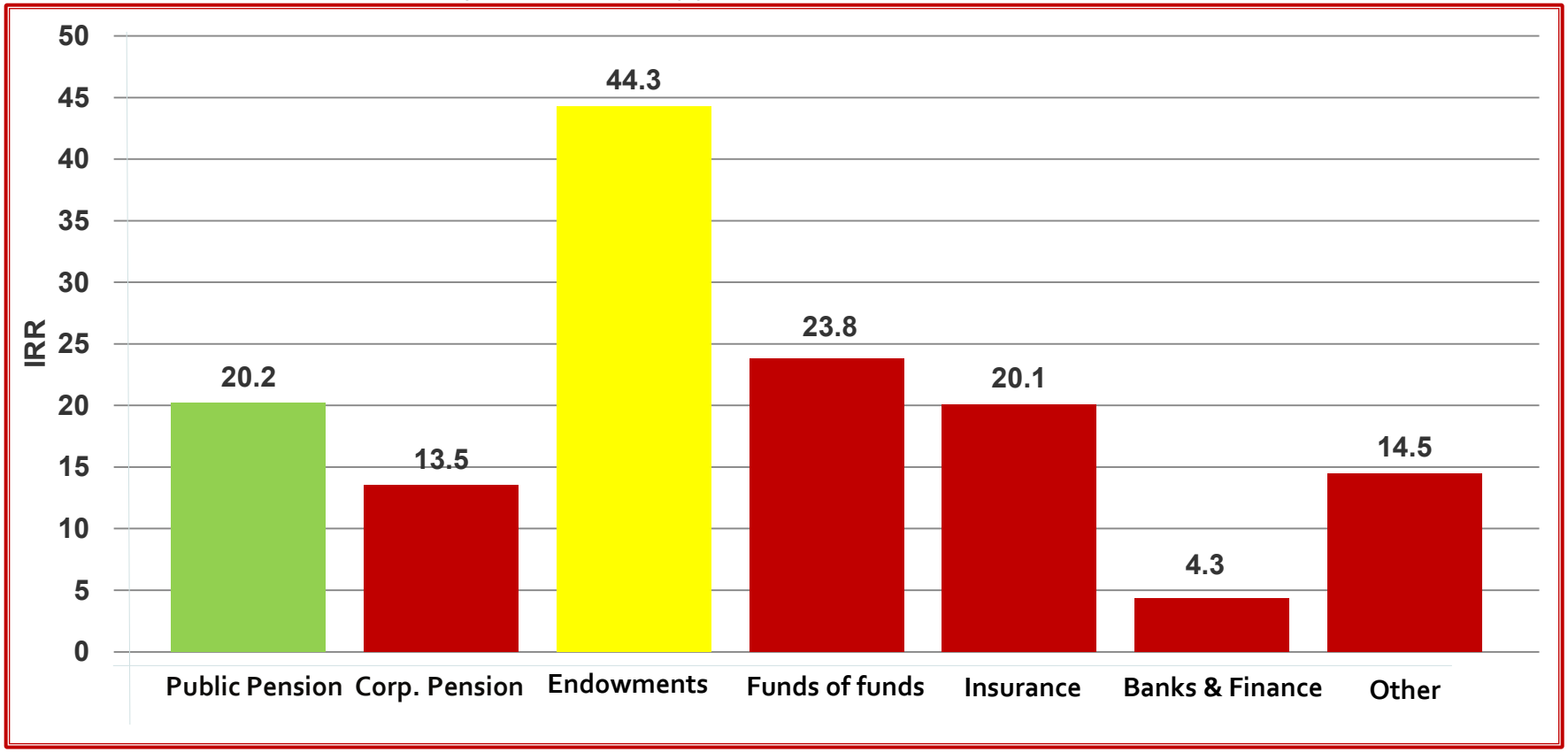
The performance of private equity – The bottom line

- Research on the alpha and beta of private equity has evolved over the past 10 years.
  - Improvements in data (e.g., moving beyond Venture Economics).
  - Improvements in methodology.
- Outperformance seems to be robust:
  - Not every study tells the same story.
  - Once returns are risk-adjusted, less outperformance than simple PME analysis suggests.
  - While not definite answers, consensus of literature would suggest betas clearly greater than one, and very modest outperformance.
    - Raises question as to whether a PE program worth it, if only getting average returns (*to be continued*…).

Measuring the performance of different classes of LPs

Well-established pattern: certain LPs do better and worse

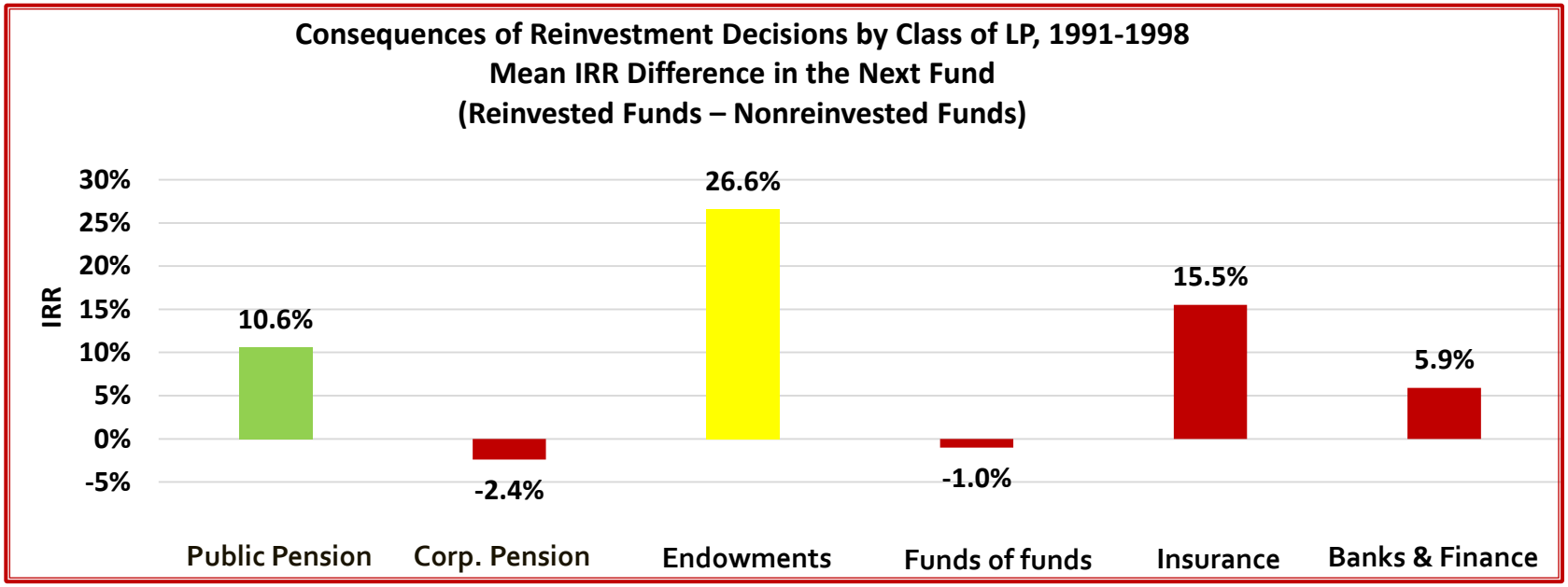
Performance (IRR) by investor type, funds formed between 1991 and 1998.



Source: Josh Lerner, Antoinette Schoar, and Wan Wongsunwai, "Smart Institutions, Foolish Choices: The Limited Partner Performance Puzzle," *Journal of Finance* 62 (2), 2007.

What are the drivers behind the historical outperformance of endowments?

- Lerner et al. (2007) found that the historic outperformance of endowment funds extended beyond access!
  - Endowments knew how to select funds for reinvestment that maintained high performance.
  - They avoided those with lower performance far better than other LPs.



Source: Josh Lerner, Antoinette Schoar, and Wan Wongsunwai, "Smart Institutions, Foolish Choices: The Limited Partner Performance Puzzle," *Journal of Finance* 62 (2), 2007.

But do endowments still outperform?

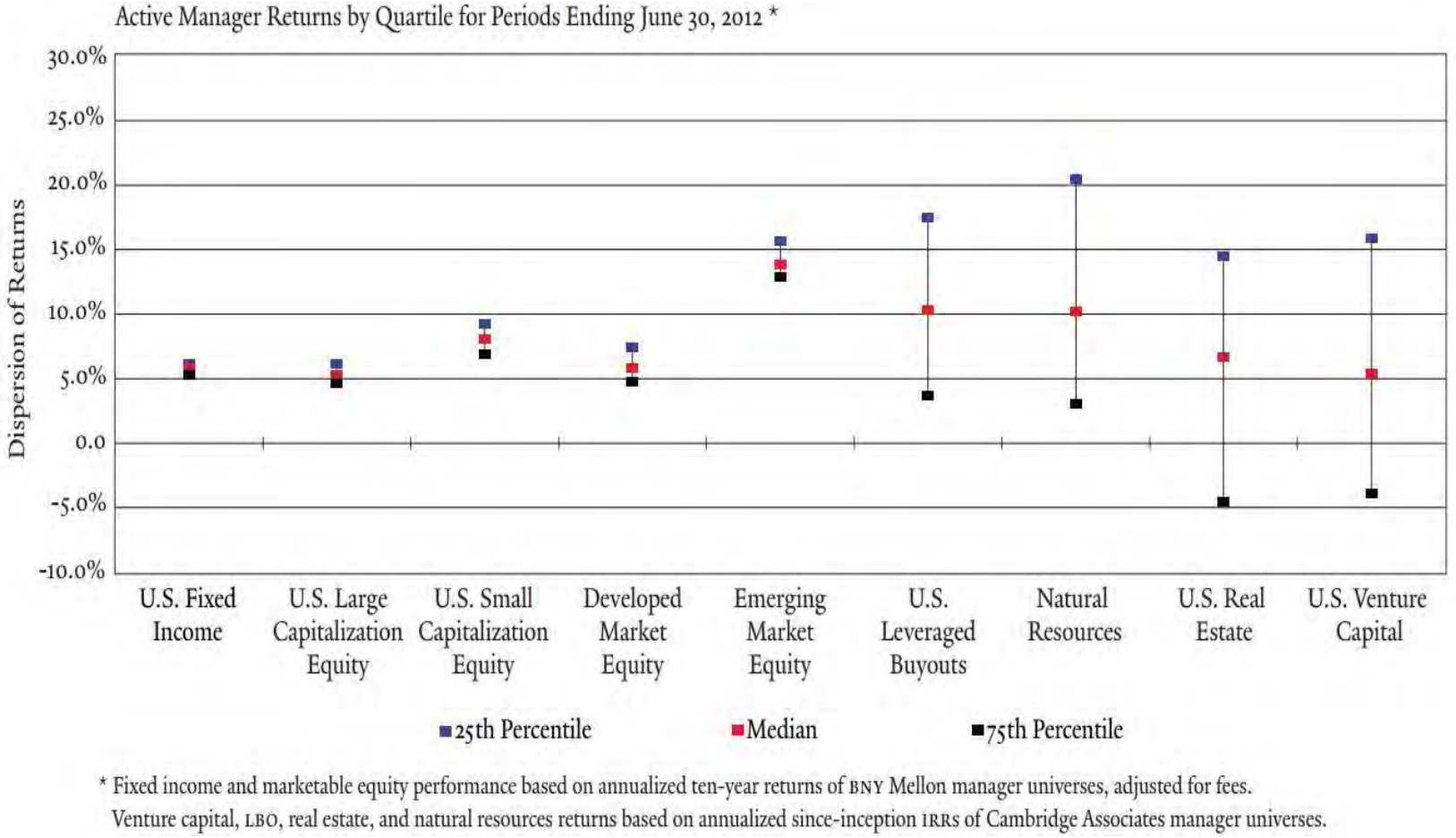
- Sensoy, Wang, and Weisbach (2013) find that endowments no longer outperformed other LPs from 1999 to 2006.
- In fact, the authors found no statistically or economically significant differences in returns across LP types.
- During this period, reinvestment decisions of endowments were not statistically unusual relative to other institutional investors.
- Still large disparity across investors, but not across *investor types*!

Source: Berk A. Sensoy, Yingdi Wang, and Michael S. Weisbach, "Limited partner performance and the maturing of the private equity industry," *Journal of Financial Economics* 112 (3), 2014.

Why might this effect have diminished?

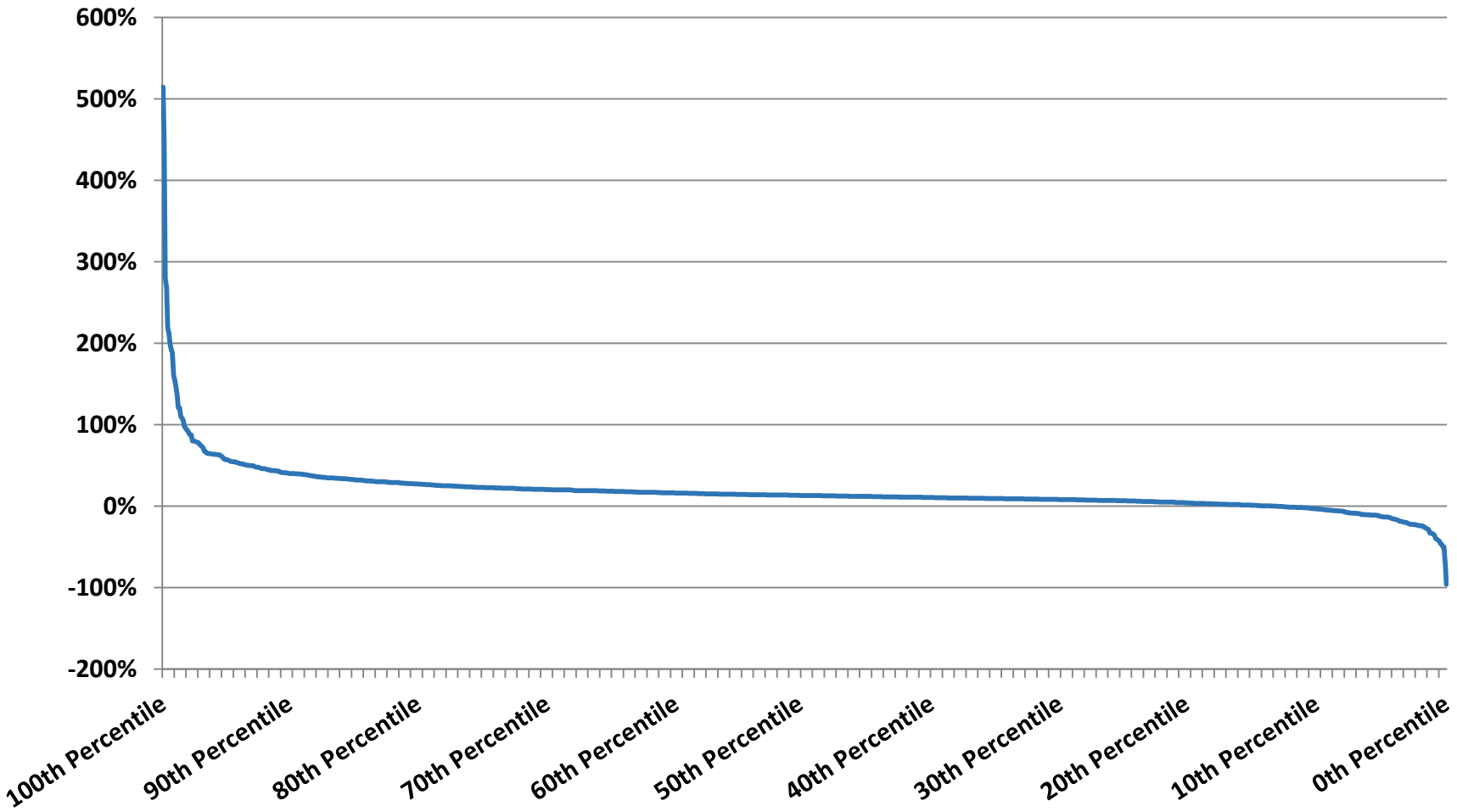
- PE and VC has wide dispersion.
- PE and VC has historically has lots of persistence.
- These twin facts has been key to success of Yale and other elite investors.
  - But persistence effect appears to have diminished.

Inter-quartile ranges and medians for asset classes



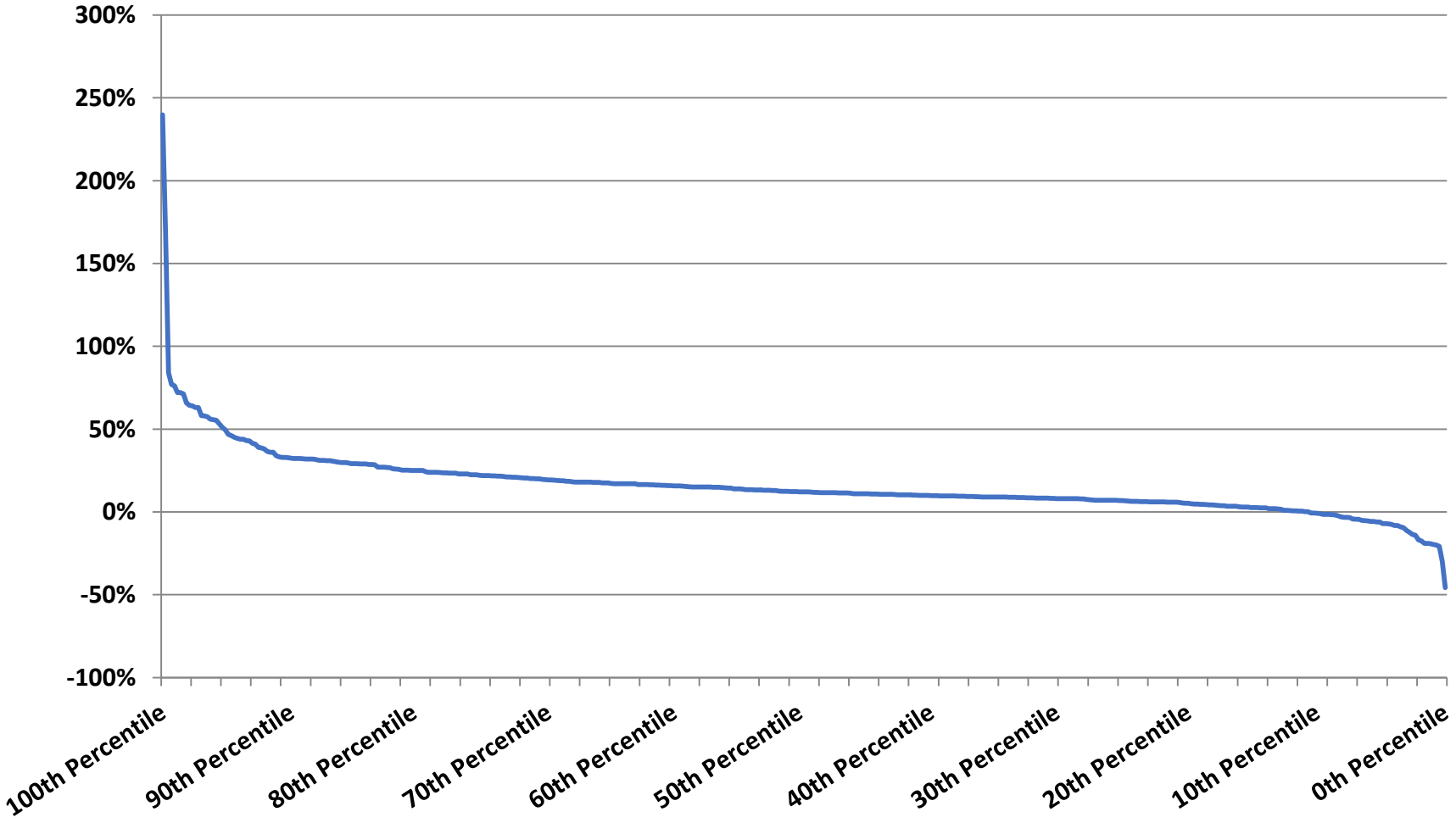
Source: 2012 Yale Endowment Report. http://investments.yale.edu/images/documents/Yale_Endowment_12.pdf

U.S. private equity fund returns



Source: Preqin database. Includes 1,087 funds with vintage of 2012 or earlier. Returns are from inception to June 30, 2015.

European private equity returns



Source: Preqin database. Includes 430 funds with vintage of 2012 or earlier. Returns are from inception to June 30, 2015.

Persistence of performance

- Kaplan and Schoar (2005) found persistence in performance:
  - High likelihood that the next funds of a given partnership stay in the same performance bracket.
  - 1% boost in past performance → 0.77% boost in performance of subsequent funds.

	Bottom	Medium	Top
Bottom Tercile	49%	31%	20%
Medium Tercile	30%	38%	32%
Top Tercile	21%	31%	48%

Source: Steven N. Kaplan and Antoinette Schoar, "Private Equity Performance: Returns, Persistence, and Capital Flows," *Journal of Finance*, August 2005.

But is persistence effect decaying?

- Recent research has found that this persistence effect has eroded.
- Harris et al. (2014): Found the persistence effect for buyout funds has weakened since 2001, but VC persistence remains strong.
  - **68.5%** of top quartile VC managers remain above the median in their next VC fund.
  - Only **50.8%** of top quartile LBO managers remain above the median in their subsequent LBO fund.

BUT

- Korteweg and Sorensen (2014): Found the persistence effect for buyout funds remains strong, but VC persistence has weakened.
  - Sample of 1,924 funds raised from 1969-2011 confirms historical persistence effect but recent evidence shows future VC funds are now no more likely to remain in quartile.
  - The top quartile is populated by both skilled, and simply lucky GPs, making "investable persistence" difficult for investors to identify, particularly in VC.

Sources: Robert S. Harris, Tim Jenkinson, Steven N. Kaplan, and Rüdiger Stucke, "Has Persistence Persisted in Private Equity? Evidence From Buyout and Venture Capital Funds," Darden Business School Working Paper, 2014; Arthur G. Korteweg and Morten Sorensen, "Skill and Luck in Private Equity Performance," Rock Center for Corporate Governance at Stanford University Working Paper, October 2014.

What are the implications of these changes?

- Data suggest that an “index fund” approach is likely to yield OK performance.
- But modest returns likely to result are unlikely to be worth the time and effort.
- Suggests that to be worthwhile, PE programs must have outperformance.
- The good news is that outperformance is not longer largely confined to one class of investor!
- Instead, we must look at the features of top performers and seek to emulate.

Characteristics of the top-performing LPs

- Clear strategy wide agreed-upon across the organization, which plays to its strengths.
- Effort to communicate to GPs why a desirable LP.
- Staff has considerable experience and has often worked together for many years.
- Active investing committees, typically drawn from the industry.
  - Committees set broad policy and do not micromanage the decisions of investment staff.
- Staff make conscious efforts to learn from their fund histories.
  - They stop to consider the processes that led them to make investments that proved particularly successful/problematic.

Source: Josh Lerner, Antoinette Schoar, and Jialan Wang, "Secrets of the Academy: The Drivers of University Endowment Success," *Journal of Economic Perspectives* 22 (3), 2008.

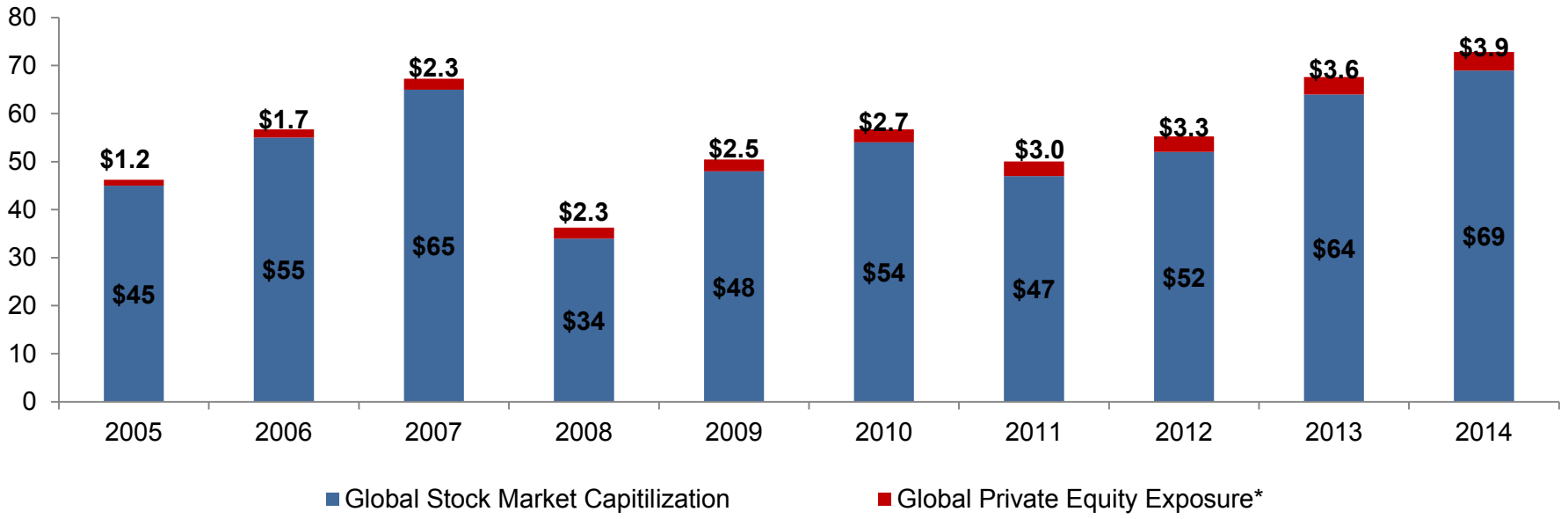
II. Brief Review of PE Industry and CalPERS' Role

Objectives of Section II

- To review the history and size of the private equity market
- To understand how CalPERS accesses private equity
- To highlight private equity's market dynamics and CalPERS' influence
- To present consultant and other public plan perspectives on private equity

Private Equity versus Global Equity

($US in Trillions)



- Private equity share of global equity market has grown from 2.7% in 2005 to 5.6% in 2014
- Private equity is growing more rapidly than global equity

CalPERS Investment Office Private Equity

** Unrealized value + Unfunded Commitment*
Source: BIS, Deutsche Bank, McKinsey Global Institute, Haver, Preqin

CalPERS Size Relative to Other Large LPs

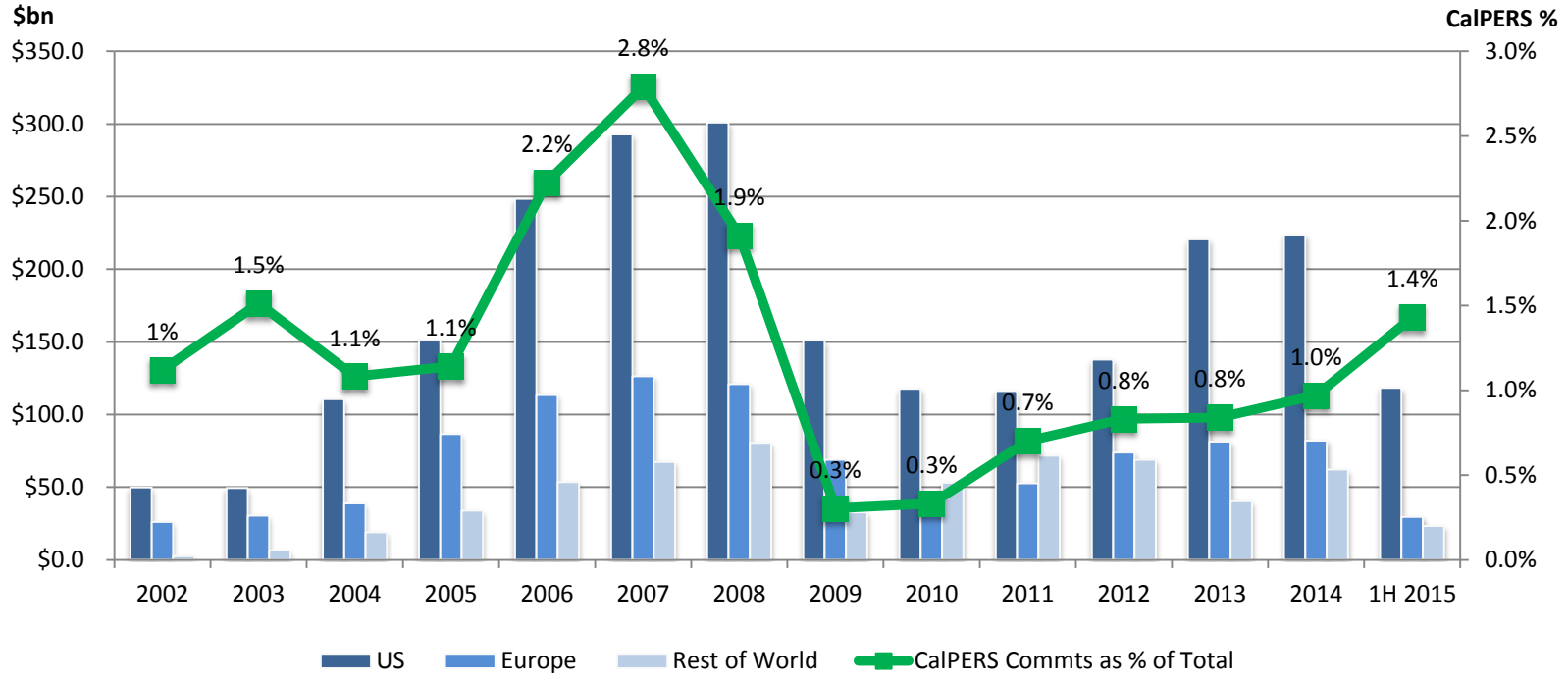
Rank	LPs (PEI LP 50)	# of Overlaps with CalPERS (PEI LP 50)	Total Capital Committed in 2010-2014 ($bn) (PEI LP 50)	% of Global Fundraising (2010-2014) (Preqin)
1	CPP Investment Board	54	28.1	1.90%
2	AlpInvest Partners	24	19.7	1.30%
3	Hamilton Lane	7	18.7	1.20%
4	HarbourVest Partners	33	16	1.10%
5	Washington State Investment Board	48	14.4	1.00%
6	Goldman Sachs Asset Management	5	14.3	1.00%
7	CalPERS	N/A	11.7	1.00%
8	Pantheon	52	12.1	0.80%
9	La Caisse de Depot et Placement du Quebec	14	12.1	0.80%
10	Teacher Retirement System of Texas	39	11.6	0.80%
11	CalSTRS	72	10.7	0.70%
12	Florida State Board of Administration	41	10.2	0.70%
13	Oregon State Treasury	58	10	0.70%
14	Alaska Permanent Fund	22	7.9	0.50%
15	Virginia Retirement System	8	7.1	0.50%
	Total		**204.5**	**13.60%**

- Ranking excludes most SWFs, many larger than CalPERS

Source: PEI LP 50 report; "Overlap" refers to funds where CalPERS and the LP are both invested

CalPERS Represents a Small Minority of Industry Fundraising

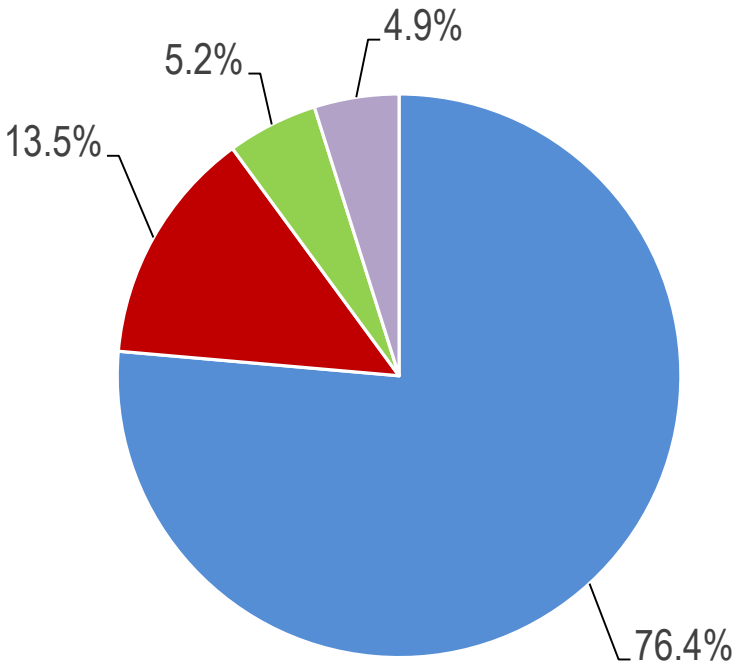
Through 6/30/15



- CalPERS has ranged from 0.3% to 2.8% of yearly commitments since 2002

Source: Preqin; Data going back to 2002. Data prior to 2002 is not reliable
Note: Data excludes Real Estate and Infrastructure funds.

CalPERS Accesses PE Largely through Funds



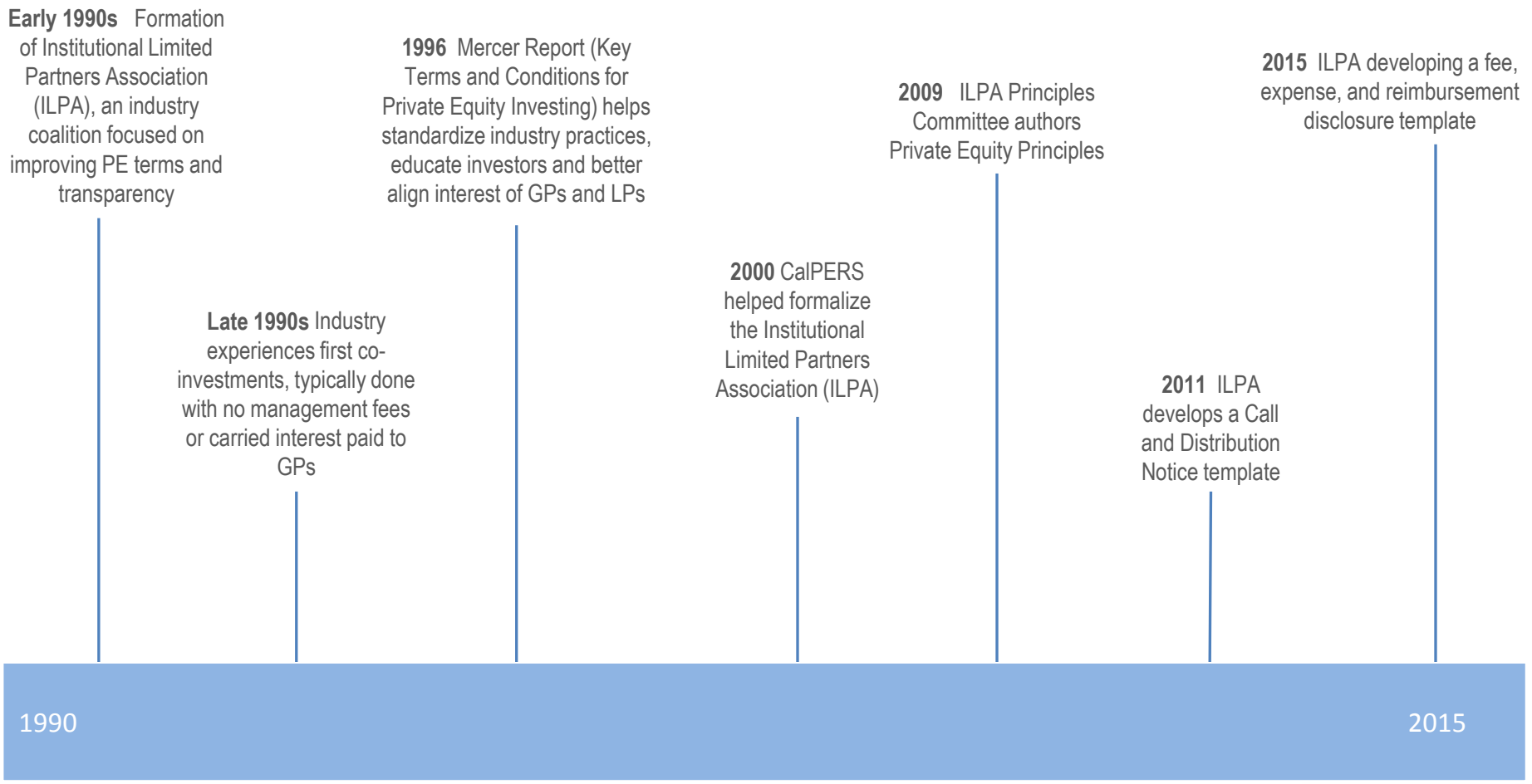
Investment Type	Net Asset Value (NAV)*
Funds	$22.0
Fund-of-Funds	$3.9
Co-Investments/Direct Investments	$1.5
Customized Investment Accounts	$1.4
TOTAL	**$28.8**

Source: State Street; Based on Net Asset Value (NAV) as of June 30, 2015; $billions.

Negotiating Dynamics

- Supply of institutional PE funds is significantly less than demand from LPs
- Many and growing number of LPs compete for allocations for a limited supply of outperforming managers
- A recent example: consistently strong performing manager
  - $10 billion fund oversubscribed by billions only a few months after releasing marketing material
  - CalPERS has invested in all six prior funds
  - CalPERS did not receive its full requested allocation
  - CalPERS unsuccessfully tried to change terms

Industry Advancement of LP Interests



III. Key Legal Terms and Conditions

Objectives of Section III

- To understand CalPERS' legal diligence process and the dynamics of negotiating the terms for established funds
- To understand some of the common terms of a Limited Partnership Agreement (LPA)
- Highlight certain material legal/business risks of a typical LPA

Due to time constraints and the complexity of the typical LPA we can not address all terms and conditions or risks of a typical private equity agreement. It is also important to note that we are discussing generalities. The specifics of any agreement will almost certainly differ in some way and may mitigate or exacerbate the risks being discussed.

Legal Review Process -- Overview

- **Limited Partnership Agreements & Side Letters.**
  - Private equity funds are typically structured as limited partnerships, wherein the control is vested with a general partner ("GP") and investors are limited partners ("LPs.") Typically, all LPs are subject to the same terms and conditions. While some LPs may be afforded unique or preferential rights in a "side letter," all LPs are otherwise subject to the same terms found in the limited partnership agreement or "LPA." Through a "most favored nation" term, others LPs' side letters (or certain terms in such side letters) may be elected.
- **There is no model LPA**
  - Each established GP has an agreement that it presents to prospective limited partners. CalPERS has participated in efforts to create a model LPA but has not been successful. The GPs consider their agreements proprietary and trade secret. Most jurisdictions respect this characterization and exempt the agreements from disclosure under sunshine laws.
- **LPAs do share many similar terms and conditions**
  - Term is typically 10-15 years; interest is illiquid; LPs have limited liability capped at their commitment amount; GPs control the fund; LPs are passive investors; GPs are broadly indemnified; investment parameters/restrictions are set; cause and/or no-cause rights are granted the LPs to remove GP/dissolve the fund and/or stop investment activity; management fees are charged typically stepping down over time; partnership and organizational expenses are charged to the LPs; profit sharing/carry (80/20) typically after preferred return with a GP catch-up.

Legal Review Process -- Overview

- **Very difficult to change terms LPs agreed to in previous LPAs that are pro-GP.**
  - Typically, for a new fund a "black line" is presented to LPs comparing the LPA agreement from the previous fund. The focus of negotiations is on the proposed changes to the LPA and CalPERS side letter.

- **GPs utilize a "divide and conquer" negotiating strategy in their fundraising and legal negotiations.**
  - Less demanding LPs or favored LPs may close first putting pressure on other LPs.
  - GPs may consider LPA comment memos when determining allocations.
  - Incentives may be created to close quickly and without protracted negotiations, e.g., by providing a management fee rebate.
  - Concerns over anti-trust violations discourage LP communications.
  - Anti-trust law does prohibit certain behavior, e.g., ILPA members cannot set a market rate such as a 1%/10% management fee and carry structure.
  - Most-favored nations clauses utilized and more narrowly applied.

- **LPs have been unable to yield greater market power by joint negotiation or joint purchasing arrangements, allowed by antitrust law.**
  - Demands on LPs to put money to work puts pressure on to close deals.
  - Investors believe best GPs outperform over time.
  - Collaboration among LPs takes substantial time and effort.
  - LPs focus on their differences rather than their similarities.

Legal Review Process -- Overview

- Notwithstanding the market challenges CalPERS devotes significant resources to reviewing and negotiating LPAs and side letters. Terms and conditions are considered and evaluated in INVO staff's written diligence and comprise a portion of the Manager Assessment Tool (MAT) scores. As will be discussed later, CalPERS has successfully improved some economic terms since 2011.
- Legal review process always involves outside counsel with transactional, tax, and ERISA/fiduciary expertise, a detailed comment letter, and a closing risk memo.
- Goal of the review is to achieve an acceptable level of alignment of interest, governance and transparency while knowingly accepting the risks of each agreement and meeting all legal requirements applicable to CalPERS. The ILPA Principles and CalPERS investment office's preferences and priorities guide the review.
  - *Alignment of Interest* – Objective is for the economic interests of the GP to be aligned with those of the LPs.
  - *Governance* – Objective is to have the appropriate mechanisms in place to resolve unforeseen conflicts, changes to the investment team or other fund parameters.
  - *Transparency* – Firm, operational, transaction, portfolio and all other information deemed essential by LPs to perform their fiduciary responsibilities should be readily available. (Note recent transparency efforts by CalPERS and ILPA.)

Alignment of Interests, Governance & Transparency

- **Many market terms address alignment, governance, and transparency.**
  - Carried Interest allows for the sharing of profit, typically 20%, with the GPs.
  - Typically, CalPERS negotiates for a preferred return, often 8%.
  - Long terms of the funds are consistent with CalPERS investment horizon.
  - Generally, the GPs commit equity alongside LPs, often 1-3%.
  - Funds are audited in accordance with GAAP.
  - LPs have access to quarterly and annual financial reporting and in more recent time periods increased transparency in capital call notices and other reports due to CalPERS and ILPA's efforts and other factors such as the recent SEC scrutiny.
  - LPs generally have some rights to end the investment period, terminate a fund, and/or remove a manager on a no-fault and/or for-cause basis.
  - A Limited Partner Advisory Committee ("LPAC") typically reviews valuations and conflicts.

Alignment of Interests, etc. (continued)

- **Other terms negatively impact alignment, governance, and transparency**
  - Complexity of Agreements & Structures The typical LPA may exceed 100 pages and is very difficult for persons outside and even inside the industry to comprehend. The legal structures often involve multiple legal entities. For example, domestic and foreign investors may invest in a fund through different legal entities. In other situations, a special purpose vehicle or alternative investment vehicle may be created to minimize taxes or address a regulatory concern. This complexity makes it more difficult to monitor the agreements and exercise governance rights.
  - *Management fees are high*. CalPERS has trimmed its GP relationships and brought its management fees down in recent years consistent with its efforts to buy "wholesale" and not "retail." Still, management fees are a profit center for GPs, not "budget-based," and compare negatively to other asset classes. Unlike many asset classes, management fees are typically paid on committed rather than contributed capital for at least the investment period of the fund.

Alignment of Interests, etc. (continued)

- **Other terms negatively impact alignment, governance, and transparency**
  - *Partnership expenses are broadly defined and paid almost entirely by LPs.* Partnership expenses may include expenses one might expect to be covered by the management fee, e.g., regulatory compliance work and GP insurance costs. Those costs may also be extravagant when compared to certain benchmarks, e.g., private air craft travel is not uncommon. While expenses may be considered before profit is split, these practices persist.
  - Expenses can also be charged to portfolio companies. GPs can also charge "out of pocket" expenses to portfolio companies. Like partnership expenses, one may expect some categories of expenses charged to portfolio companies to come out of the management fee and/or may be considered excessive. These expenses are not considered in the carry waterfall and transparency of these expenses has historically been weak. In addition, these expenses are not typically offset against management fees.

Alignment of Interests, etc. (continued)

- **Other terms negatively impact alignment, governance, and transparency**
  - Portfolio Company Fees can be earned by the GP. While the trend has been to offset up to 100% of some portfolio company fees against management fees, this issue continues to be negotiated on a case-by-case basis. While some types of fees have moved towards a 100% offset, e.g., monitoring fees; other fees may be entirely exempt, e.g., operating partner expertise. Recent SEC action and CalPERS diligence has led to much more specific disclosures being made by the GPs. For example, fees are not always shared when the fund is not the 100% owner of the portfolio company. In addition, acceleration of fees and evergreen fees have been highlighted recently by the SEC and others. Finally, the waterfall typically does not consider the fees earned.
  - Management Fee Waivers. A contractual arrangement whereby GPs who desire to have a greater share of profits and less management fee may elect to waive some portion of management fees and in lieu thereof treat an equal amount of capital contributed by LPs as the basis for creating a profits interest for the GP. While impact on tax-exempt LPs should be neutral so long as the management fee waiver is accounted for in the waterfall, some industry participants are very critical of the practice.

Alignment of Interests, etc. (continued)

- **Other terms negatively impact alignment, governance, and transparency**
  - Typical waterfall structure is deal-by-deal. GPs negotiate to get carry earlier rather than later raising risk that GPs receive more than the agreed profit share or earns carry without ultimately providing the preferred return. This creates an incentive to sell "winners" early and hold "losers" longer. This also creates "clawback risk."
  - Clawbacks may not make investors whole. Clawbacks may be net of assumed taxes, difficult to collect and may not take into account the time value of money. While LPs may successfully negotiate for several guarantees, some escrow protection, and, most recently, interim clawbacks, the risk remains that clawbacks may not make the investors whole.
  - The GPs are broadly indemnified. Under Delaware law (which is the applicable law for most U.S.-based funds), fund documents may eliminate all fiduciary duties other than the obligation of good faith and fair dealing. Typically a fund manager is indemnified and exculpated unless there is gross negligence, fraud, or willful misconduct. Other terms further limit LPs' ability to hold GPs accountable for losses.
  - Limited Remedies for Adverse Events in Private Equity Funds. Absence damages resulting from gross negligence, fraud, or willful misconduct in private equity funds generally have certain limited rights to dissolve the fund, remove the GPs and/or terminate the ability of the GPs to make new investments. However, these rights are limited and difficult to exercise.

Alignment of Interests, etc. (continued)

- **Other terms negatively impact alignment, governance, and transparency**
  - LPAC Access to Information. While the LPAC may be responsible for certain decisions, a lack of process, information sharing, transparency, and access to third-party resources puts the LPAC at a distinct information disadvantage when it is presented with decisions by the GPs. Often, a short timeline for a decision may be requested. Further, voting mechanisms of an LPAC may enable GPs to get approval of items where there might not be widespread support among the LPs.
  - Additional Risks. There are many other terms and conditions that negatively impact risk. A typical private placement memorandum (PPM) will highlight dozens of additional business/legal risks. Those risks include issues like leverage, LPs with special preferences, lack of liquidity, conflicts, concentration risk, market risks, tax risks, regulatory risks, litigation risk, etc.

IV. Examples of Waterfall Accounting

Objectives for Section IV

- Define key economic terms
- Review Private Equity waterfall and the treatment of fees and profit share
- Review ILPA disclosure template

DUFF & PHELPS

CalPERS

November 16, 2015

Private Equity Workshop Discussion

Agenda

I. Preliminary Observations – Key Concepts

II. CalPERS Fund Waterfall Example

III. Hurdle & Catch Up

IV. Management Fees & Profit Interest Allocation

V. Fee Waivers

VI. Fee Offsets

VII. Closing Observations

Appendix

A. Management Fees and Profit Interest Allocation

B. Fee Waivers

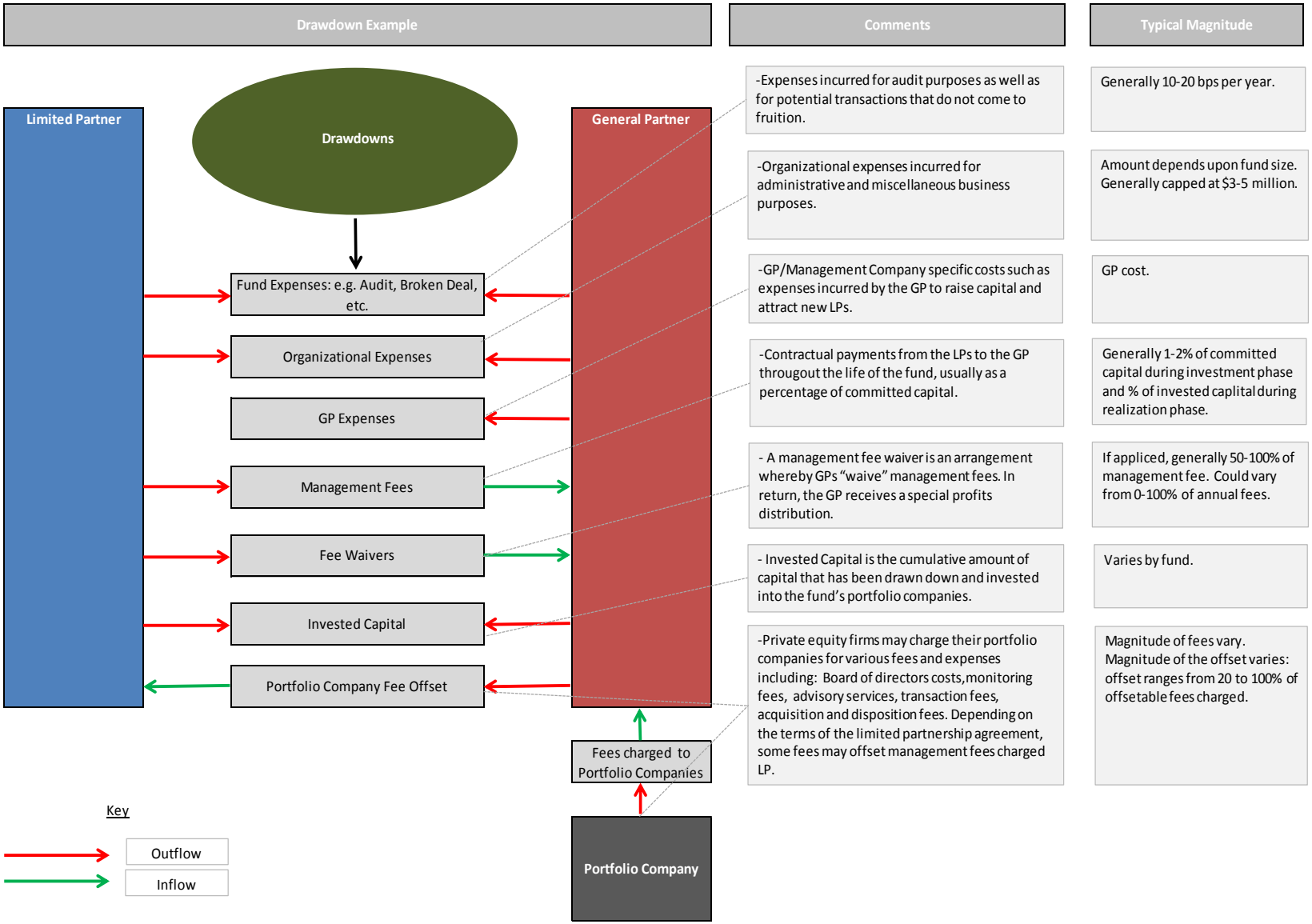
C. Fee Offsets

I. Preliminary Observations – Key Concepts

Preliminary Observations – Key Concepts

- Cash flows are cash flows; therefore IRRs are IRRs
  - Cash flows and IRRs are fact based not judgment based
- Cash inflows and outflows are dictated by the Limited Partner Agreement (LPA)
  - Focus of this presentation is how the LPA dictates cash flows and potential gray areas that could cause LP cash flow leakage
  - What could or should be negotiated as part of the LPA is beyond the scope of this discussion
- The LPA waterfall calculation can be, and often is very complex
- Subject to the LPA, cash flows between the GP and a portfolio company may or may not impact cash flows to the LP
- Cash flows between a GP and a portfolio company are usually not fully transparent

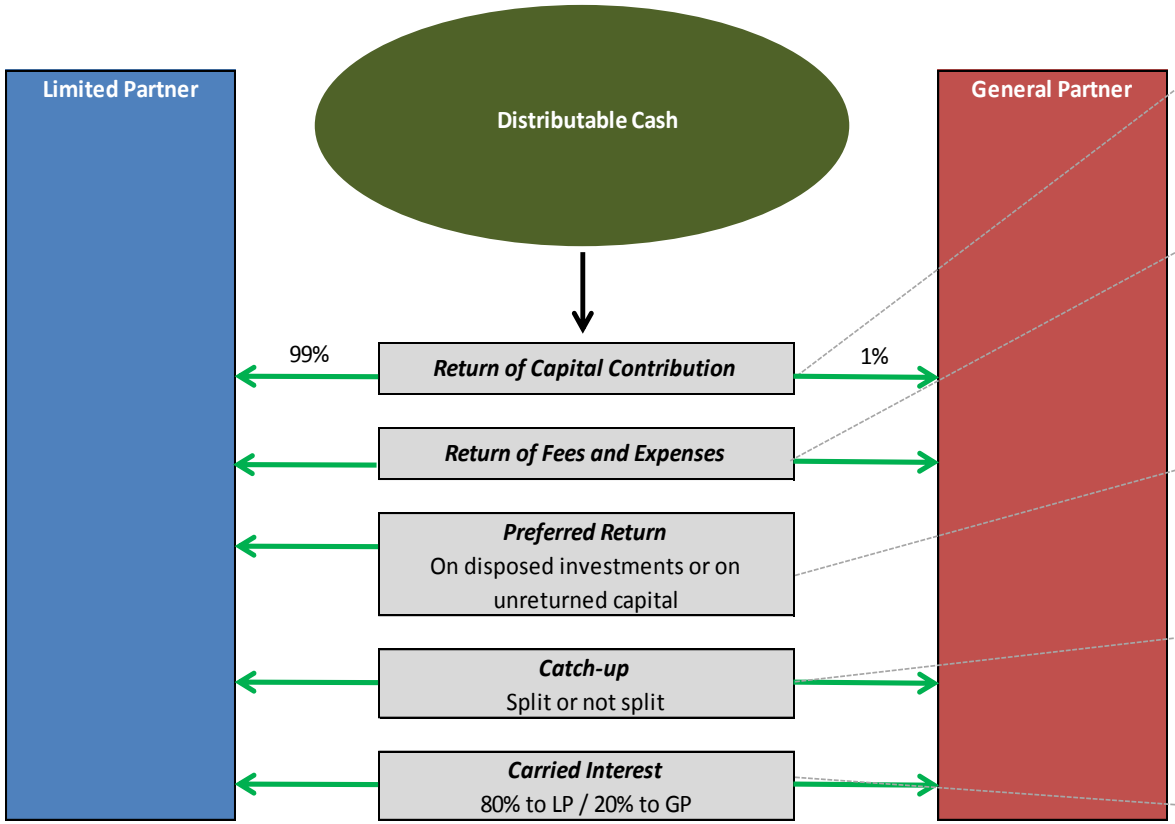
Drawdowns – Conceptual Discussion



Distributions – Conceptual Discussion

Typical Waterfall

Distribution Waterfall: Typical Example



Comments

-In many waterfalls, distributable cash is initially apportioned to all partners in proportion to their investment percentages (i.e. 99% LPs, 1% GPs).

-Return of capital contribution typically include (i) cost of investment, (ii) organizational expenses & management fees, (iii) unreturned capital contribution of previously disposed investments and, (iv) write downs of current unrealized investments.

-Preferred return "hurdle" is either calculated on (i) the capital contribution made toward the specific investment or on (ii) the total amount of unreturned capital contribution. Preferred return is either a compounded annual rate of return or an IRR.

-The catch-up allows for the GP to get its 20% share of the preferred return "hurdle". Usually 100% of the remaining cash goes to the GP until it is fully caught up with the LPs. Sometimes the catch-up is split with the LPs.

-Any remaining cash is split between the GP and the LPs. Usually 20/80, but other split may apply or sliding scales may apply as the total IRR of the fund.

II.

CalPERS Fund Waterfall Example

Performance Fees: The "Waterfall" Calculation

Assumptions: $100 million investment ($99 LP / $1 GP)
$8 mil of fees and expenses incurred
80% / 20% LP/GP Profit Interest
8% Hurdle

$163,000,000 proceeds

		LP	GP
Step 1	Return Cost	$82,000,000[1]	
Step 2	Return Fees	$8,000,000	
Subtotal: Net Gains Distributable		**$73,000,000**	
Step 3	LP Hurdle	$7,920,000	
Step 4	"Catch up" GP to 20%		$1,980,000
Subtotal: Residual Gains Distributable		**$63,100,000**	
Step 5	Residual Gain to Distribute 80/20	$50,480,000 (80%)	$12,620,000 (20%)
Total Net Gains Distributed		$58,400,000	$14,600,000
Return of Cost & Fees		$90,000,000	—
Total Distribution		**$148,400,000**	**$14,600,000**

Note: [1]For simplicity return of GP capital included with LP Capital as GP receives its return of capital in the same sequence as the LP. Net of recycled investments (i.e. $99 million less $17 million = $82 million.

III. Hurdle & GP Catch Up

Distribution Mechanics – Hurdle & Catchup

- Most LPAs provide for a hurdle or “preferred return”
- For PE Funds the hurdle primarily drives the priority of cash flow distributions rather than the magnitude or the certainty of cash flows
- In the waterfall, once capital and fees/expenses have been returned, gains are first allocated to the LP until the “hurdle” return is achieved.
- Gains are then allocated to the GP either 100% or in some cases 80% GP / 20% LP until the GP “catches up” to achieve the contractual profit interest allocation (often 80/20).

Distribution Mechanics – Catch Up Example

Assumptions

- The fund sells one investment for $150 million (cost basis of $100 million) after one year
- Preferred return is 8% per year
- 80/20 profit interest allocation

	Scenario 1: GP Catch up 100%			Scenario 2: GP Catch up 80/20		
	LPs	GP	Total	LPs	GP	Total
Proceeds			$ 150.0			$ 150.0
Return of Capital	$ 100.0		$ 100.0	$ 100.0		$ 100.0
Preferred Return	$ 8.0	$ -	$ 8.0	$ 8.0	$ -	$ 8.0
Remaining Gain to be allocated			$ 42.0			$ 42.0
GP Catch up		$ 2.0	$ 2.0	$ 0.5	$ 2.2	$ 2.7
Remaing Carry to be split	$ 32.0	$ 8.0	$ 40.0	$ 31.5	$ 7.8	$ 39.3
Total Distributions	$ 140.0	$ 10.0	$ 150.0	$ 140.0	$ 10.0	$ 150.0

Note: The assumptions above are presented solely for illustrative purposes. For simplicity, no management fees shown & GP Capital combined with LP Capital.

Distribution Mechanics – Catch Up Example

Why does 100% vs 80/20 matter?

- Assume return is $ 110 rather than $ 150

	Scenario 1: GP Catch up 100%			Scenario 2: GP Catch up 80/20		
	LPs	GP	Total	LPs	GP	Total
Proceeds			$ 110.0			$ 110.0
Return of Capital	$ 100.0		$ 100.0	$ 100.0		$ 100.0
Preferred Return	$ 8.0	$ -	$ 8.0	$ 8.0	$ -	$ 8.0
Remaining Gain to be allocated			$ 2.0			$ 2.0
GP Catch up	$ -	$ 2.0	$ 2.0	$ 0.4	$ 1.6	$ 2.0
Remaing Carry to be split	$ -	$ -	$ -	$ -	$ -	$ -
Total Distributions	$ 108.0	$ 2.0	$ 110.0	$ 108.4	$ 1.6	$ 110.0

Note: The assumptions above are presented solely for illustrative purposes. For simplicity, no management fees shown, and LP Capital combined with GP Capital.

IV. Management Fees & Profit Interest Allocation

Magnitude of Management Fees vs Profit Interest Allocation

- Historical rule of thumb 1-2% management fee; 80/20 Profit Interest allocation
- Management fees intended to cover operating expenses of a fund
- If LP Profit Interest is increased or management fee's are decreased, LP cash flows are enhanced
- General rule of thumb, if gains exceed 2X, it is more beneficial to have a greater profits interest rather than a lower management fee if only one term can be modified

Cash Flows, Management Fees, and Realizations

Impact of different terms on a 2.2X gross return:

- Fund size $200; LP/GP Commitment 95%/5%
- 2% Management Fee; 80/20 Profit Interest
- 2% Management Fee, 85/15 Profit Interest
- 1% Management Fee, 80/20 Profit Interest

	2% Management Fee; 80/20 Profit Interest		2% Management Fee; 85/15 Profit Interest		1% Management Fee; 80/20 Profit Interest	
	LP	Total Fund	LP	Total Fund	LP	Total Fund
Capital Invested	$ 171.0	$ 180.0	$ 171.0	$ 180.0	$ 171.0	$ 180.0
Mgmt. Fees/Exp.	20.0	-	20.0	-	10.5	-
Cash Invested	191.0	180.0	191.0	180.0	181.5	180.0
Cash Returned	339.2	396.0	348.4	396.0	337.3	396.0
Total Gain	148.2	216.0	157.4	216.0	155.8	216.0
IRR	**12.65%**	**17.08%**	**13.27%**	**17.08%**	**13.47%**	**17.08%**

Note: Assumptions above are presented solely for illustrative purposes. For simplicity, 5 year hold period; $ 1 of fund expenses. LP Cash invested includes management fees and fund expenses. LP Cash returned net of GP Profit Allocation. See Appendix A of Section IV: Duff & Phelps

V. Fee Waivers

Fee Waivers

- Used by select managers; Not all managers
- Changes the risk characteristics of management fee income, allowing it to be treated (subject to specific facts and circumstances and IRS concurrence) as a capital gain
- As management fees are waived, fund operating expenses are covered by existing management company working capital and/or special distribution from GP capital account
- No tax impact on non taxpaying LPs
- No impact on LP cash flows
- Negative impact on LP IRR

Fee Waivers

$200 Fund Size; LP Commitment 190 (95%); GP commitment 10 (5%); 2% Management Fee; Profit Interest 80% LP / 20% GP $1.0MM total fund expenses, 5-year investment/return

- Scenario 1: 2.2x exit and no fee waiver
- Scenario 2: 2.2x exit and fee waiver equal to GP commitment

- Scenario 3: 1.2x exit and no fee waiver
- Scenario 4: 1.2x exit and fee waiver equal to GP commitment

	No Fee Waiver 2.2x return		Fee Waiver = GP Commitment		No Fee Waiver 1.1x return		Fee Waiver = GP Commitment	
	LP	Total Fund	LP	Total Fund	LP	Total Fund	LP	Total Fund
Capital Invested	$ 171.0	$ 180.0	$ 180.0	$ 180.0	$ 171.0	$ 180.0	$ 180.0	$ 180.0
Mgmt. Fee/Expenses	20.0	-	11.0	-	20.0	-	11.0	-
Cash Invested	191.0	180.0	191.0	180.0	191.0	180.0	191.0	180.0
Cash Returned	339.2	396.0	339.2	396.0	205.2	216.0	205.2	216.0
Total Gain	148.2	216.0	148.2	216.0	14.2	36.0	14.2	36.0
IRR	**12.65%**	**17.08%**	**12.56%**	**17.08%**	**1.51%**	**3.71%**	**1.50%**	**3.71%**

Note: Assumptions above are presented solely for illustrative purposes. LP Cash Invested includes management fees, fund expenses and GP commitment (if applicable). For simplicity, 5 year hold period. See Appendix B of Section IV: Duff & Phelps

Fee Waivers

Pros

- Could incentivize manager, as the GP fee waiver benefit is only obtained if there are profits
- Cash neutral to the LP

Cons

- Raises implicit question as to whether Management Fee is too large if it can be waived
- Could encourage GPs to “time” exits
- Decreases LP IRR

VI. Fee Offsets

Fee Offsets

- LPAs may provide that fees charged by the manager to a portfolio company will offset (reduce) Management Fees
- Fees subject to offset could include:
  - Monitoring Fees
  - Transaction Fees
  - Board fees
  - Advisory Fees
  - Other fees
- Some fees and expenses charged to the portfolio company may not be subject to offset depending on LPA provisions
- Fees charged to portfolio companies may or may not impact the ultimate exit value
- Transparency into fees charged is generally limited
- When fees charged to a portfolio company offset the LP management fee, LP cash flow and IRR is generally enhanced

Impact of Fee Offsets

$200 Fund Size; LP Commitment 190 (95%); GP commitment 10 (5%); 2% Management Fee; Profit Interest 80% LP / 20% GP $1.0MM total fund expenses, 5-year investment/return

- Scenario 1: No fees charged to portfolio company
- Scenario 2: 50.0% of management fee offset
- Scenario 3: 100.0% of management fee offset
- Scenario 4: 100.0% of management fee offset; GP receives accelerated monitoring fees at exit with no benefit to LPs

	No Fee Offset		50% Fee Offset		100% Fee Offset		Acceleration Payment not shared with LP	
	LP	Total Fund	LP	Total Fund	LP	Total Fund	LP	Total Fund
Capital Invested	$ 171.0	$ 180.0	$ 171.0	$ 180.0	$ 171.0	$ 180.0	$ 171.0	$ 180.0
Mgmt. Fee/Expenses	20.0	-	10.5	-	1.0	-	1.0	-
Cash Invested	191.0	180.0	181.5	180.0	172.0	180.0	172.0	180.0
Cash Returned	339.2	396.0	337.3	396.0	335.4	306.0	312.6	366.0
Total Gain	148.2	216.0	155.8	216.0	163.4	126.0	140.6	186.0
IRR	**12.65%**	**17.08%**	**13.47%**	**17.08%**	**14.32%**	**17.08%**	**12.72%**	**15.25%**

Note: Assumptions above are presented solely for illustrative purposes . For simplicity, 5 year hold period and an additional $30.0MM acceleration fee to GP, not shared with LP. See Appendix C of Section IV: Duff & Phelps

Impact of Fee Offsets

Pros

- Portfolio companies benefit from PE firm relationships, experience and management capabilities, which ultimately enhances exit value.
- Fee offsets can enhance LP's IRR.
- Fee offsets can reduce required LP investment (reduce management fees) without impacting exit value.

Cons

- Fees may not provide value to portfolio company.
- Fees may deprive portfolio company of capital that could be better deployed in other ways.
- LPs harmed if fees not offset (shared).
- Limited transparency into amounts and purpose of fees.
- Possible that potential buyers may not make pro-forma adjustment for fees, thereby decreasing exit value.

VII. Closing Observations

Closing Observations

- Management Fee and Profit Interest Allocation subject to negotiation
  - Greater LP/GP profit allocation is more beneficial to the LP in high performing funds
  - Lower Management fees are more beneficial to LP in lower performing funds
- Fee Waivers have no impact on aggregate LP cash flows, but at the margin negatively impacts LP IRR due to the timing of cash flows
- Fee Offsets—fees charged to a portfolio company:
  - Are potentially beneficial to the LP if management fees are offset;
  - May or may not impact the exit value and thereby gain
  - May adversely impact portfolio company growth or exit value
- Alignment of Interest is key; LPs interests are protected when:
  - Expenses charged to a fund are appropriate
  - Waived Fees do not impact LP cash flow
  - Fees charged to portfolio companies are appropriately disclosed and shared and do not impact exit value

Example Funds Term Summary

Fund Name	Fund A	Fund B	Fund C	Fund D	Fund E	Fund F
Waterfall Type	Deal-by-Deal	Deal-by-Deal	European	Deal-by-Deal	Deal-by-Deal	Deal-by-Deal
Age of Fund	6 years	Exited	14 years	10 years	10 years	13 years
Management Fee – Commitment Period and Investment Period	1.5% of commitment during Investment Period, 1.0% of Invested Capital post Investment Period	1.5% of commitment up to specified Fund size threshold, 1.0% in excess of the threshold during Investment Period, 0.75% of invested capital post Investment Period	1.5% of commitment during Investment Period, 1.0% post Investment Period	2.0% of commitments during Investment Period, 1.5% of remaining cost of investments post Investment Period	1.5% of commitment during Investment Period, 1.0% of Invested Capital post Investment Period	1.114% of commitment during Investment Period, 0.557% of Invested Capital post Investment Period
Profit Sharing	80%/20%	80%/20%	80%/20%	80%/20%	75%/25%	80%/20%
Catch Up	100%	100%	100%	100%	100%	100%
Management Fee Offsets	80% of all fees received from portfolio companies, excluding specialized consulting and advisory services	100% of allocated fees & expenses , including taxes, legal fees, LPAC expenses, insurance, third-party advisory committee expenses & Broken Deal Fees	50% Directors Fees & Transaction Fees	100% of Directors' Fees and Breakup Fees, 75% of Transaction Fees and Monitoring Fees	100% of Directors Fees, 75% of Monitoring & Transaction fees	57.5% Transaction & Monitoring Fees
GP Commitment and Funding Type (Deemed/Cash)	- 8% - Cash or Fee Waiver	– Minimum 1% of total commitments, 2.34% actual; – Cash	– Minimum 5% of total commitments, – Cash	- Cash	- 0.2% - Cash or Fee Waiver	- 2.5% - Cash or Fee Waiver
Preferred Return	7%	10%	8%	8%	8%	None
Unique Terms		Management Fees outside commitment				Management Fees outside commitment

Circles highlight specific waterfall and fee elements illustrated in subsequent slides

Waterfall Illustrations

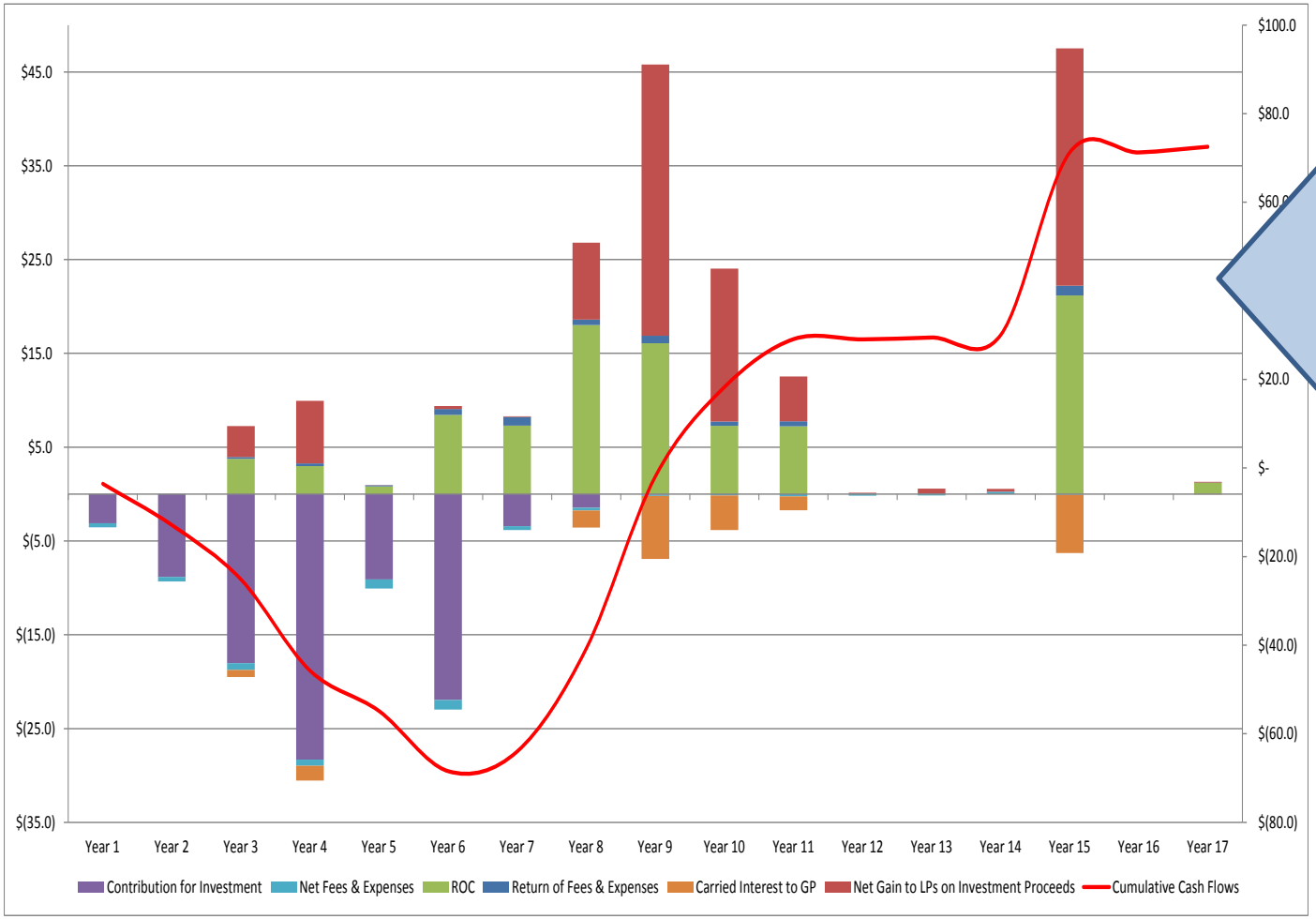
	Fund A	Fund B	Fund C	Fund D	Fund E	Fund F
Waterfall Type	Deal-by-Deal	Deal-by-Deal	European	Deal-by-Deal	Deal-by-Deal	Deal-by-Deal
Contribution for Investment	$80,473,946	$94,284,516	€ 84,430,196	$87,301,169	$85,587,241	$96,962,995
Net Fees & Expenses	10,426,054	5,715,484	7,569,804	9,498,831	5,572,759	3,037,005
Total Capital Called	$90,900,000	$100,000,000	€ 92,000,000	$96,800,000	$91,160,000	$100,000,000
Total Investment Proceeds	$60,849,668	$217,095,352	€ 182,629,260	$73,795,030	$86,045,620	$189,518,031
ROC	(29,157,093)	(94,284,516)	(84,430,196)	(28,522,374)	(49,636,113)	(48,518,189)
Return of Fees & Expenses	(4,885,087)	(5,715,484)	(7,569,804)	(2,220,336)	(962,389)	(596,503)
Carried Interest to GP	(5,315,171)	(22,286,573)	(18,125,952)	(6,475,822)	0	(22,278,665)
Net Gain to CalPERS	$21,492,317	$94,808,779	€ 72,503,308	$36,576,498	$35,447,118	$118,124,674

	Fund A	Fund B	Fund C	Fund D	Fund E	Fund F
Gross Management Fees	$14,645,206	$7,992,124	€ 7,984,587	$12,096,320	$8,032,000	$6,659,010
Management Fee Offsets	(5,354,978)	(3,610,327)	(1,335,762)	(4,725,125)	(3,004,567)	(4,296,144)
Net Management Fees	9,290,228	4,381,798	6,648,825	7,371,195	5,027,433	2,362,866
Partnership Expenses	1,135,826	1,333,686	920,978	2,127,636	545,327	674,138
Net Fees & Expenses	$10,426,054	$5,715,484	€ 7,569,804	$9,498,831	$5,572,759	$3,037,005

	Fund A	Fund B	Fund C	Fund D	Fund E	Fund F
Gross IRR	18.3%	18.9%	32.0%	2.8%	6.0%	22.3%
Net IRR*	15.5%	14.5%	24.0%	-1.5%	4.0%	16.4%
Gross-Net spread	-2.8%	-4.4%	-8.0%	-4.3%	-2.0%	-6.0%
Remaining NAV ($mm)	$83.8	$0.0	€ 8.2	$42.6	$29.4	$34.1

*Excludes portfolio company fee drag (1% p.a. per Phalippou and Gottschalg)

Fund B – Deal-by-Deal Waterfall

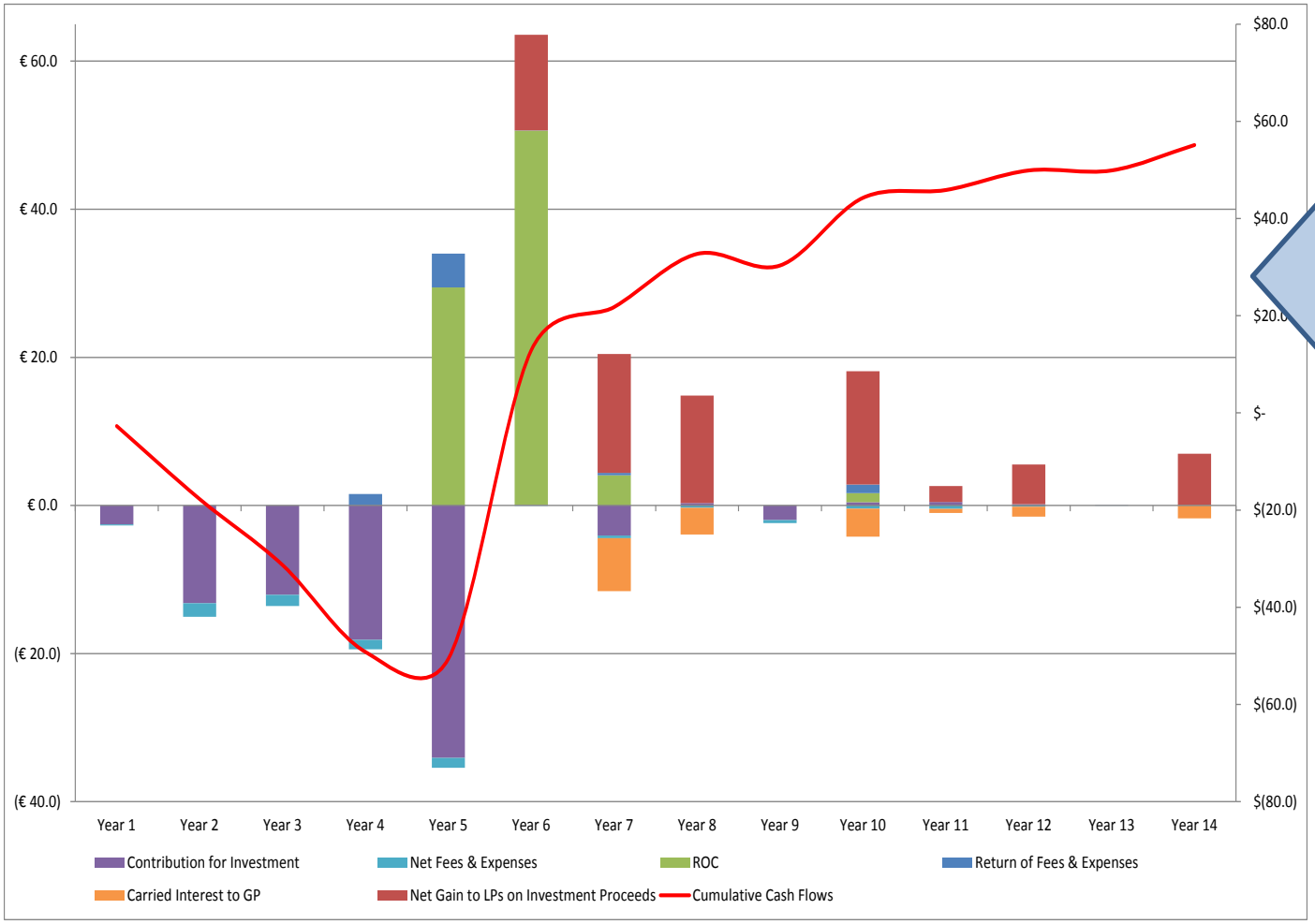


Deal-by-Deal:

- Cumulative cash flow curve generally less shallow
- GP started participating in profit sharing in year three

*Fund has been exited; Fund level net IRR 14.5%

Fund C – European Waterfall

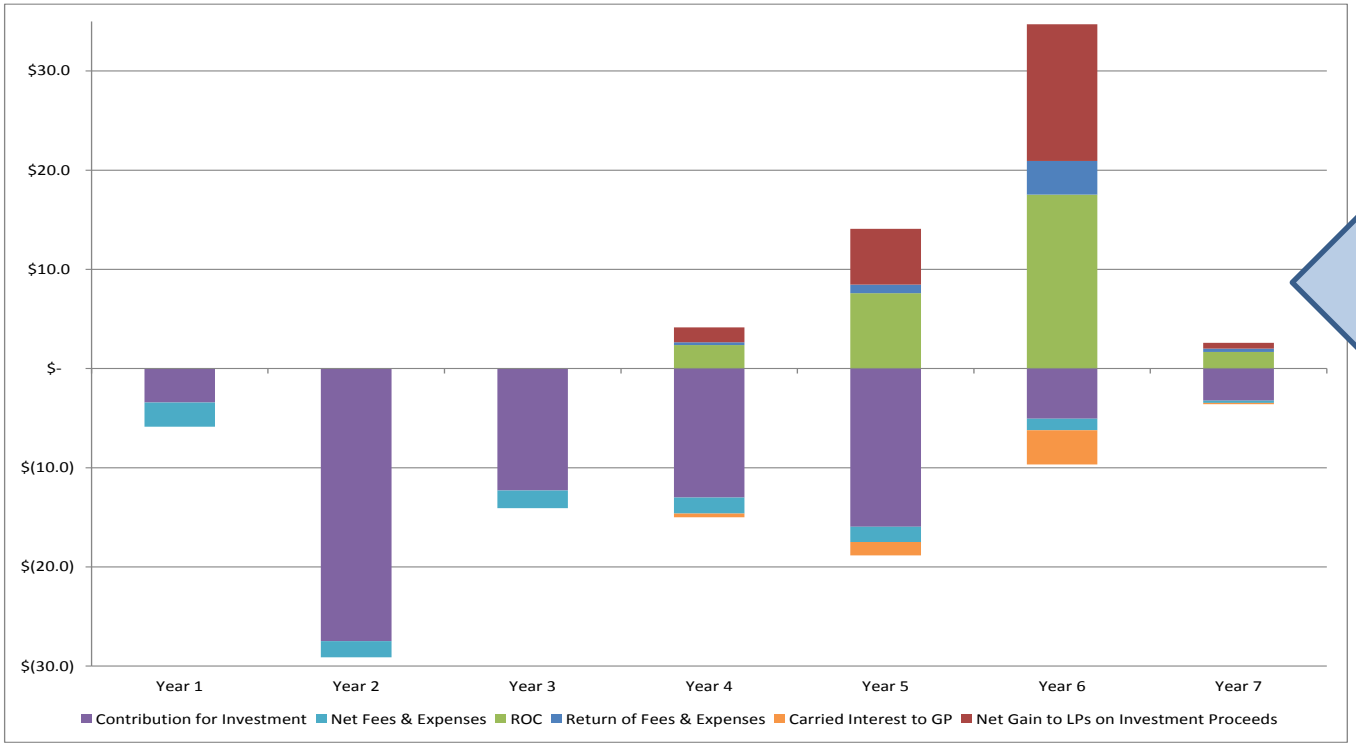


European:

- Cumulative cash flow curve generally shallow
- GP does not participate in profit sharing until year seven

*As of 6/30/15, fund level net IRR 24%

Fund A – Management Fee Waiver



Key Points:

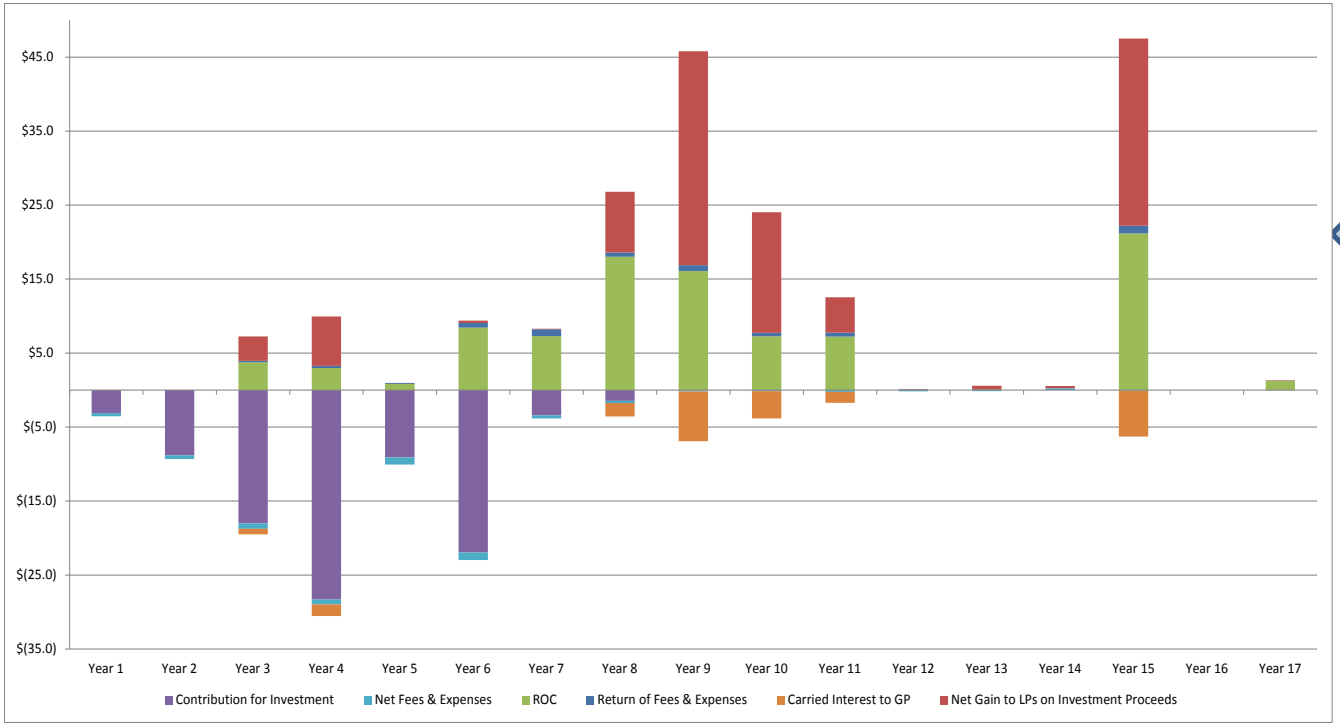
- ~58% of management fees waived through year seven
- No economic impact on LP cash flows

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Net Management Fees	$ (2.55)	$ (1.61)	$ (1.61)	$ (1.61)	$ (1.61)	$ (1.12)	$ (0.29)	$ (10.42)
Cash Management Fee	$ (0.57)	$ (0.73)	$ (0.59)	$ (0.85)	$ (0.96)	$ (0.72)	$ (0.05)	$ (4.47)
Waived Management Fee	$ (1.98)	$ (0.89)	$ (1.02)	$ (0.77)	$ (0.65)	$ (0.40)	$ (0.24)	$ (5.95)
Percentage of Management Fee Waived	77.55%	54.99%	63.39%	47.60%	40.38%	35.45%	84.11%	57.10%

.

*As of 6/30/15, fund level net IRR 15.5% and net TVPI, 1.6x

Fund B – Management Fee Offset



Key Points:

- 45% of management fees are offset

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Gross management fees	$ (0.45)	$ (1.08)	$ (1.08)	$ (1.08)	$ (1.08)	$ (1.08)	$ (0.51)	$ (0.43)	$ (0.33)	$ (0.28)	$ (0.18)	$ (0.16)	$ (0.16)	$ (0.09)	$ -	$ -	$ -
Fee offset	$ -	$ 0.60	$ 0.37	$ 0.62	$ 0.24	$ 0.27	$ 0.32	$ 0.16	$ 0.29	$ 0.13	$ 0.06	$ 0.05	$ 0.07	$ 0.42	$ -	$ -	$ -
Net management fees	$ (0.45)	$ (0.48)	$ (0.71)	$ (0.46)	$ (0.84)	$ (0.81)	$ (0.19)	$ (0.27)	$ (0.04)	$ (0.14)	$ (0.12)	$ (0.11)	$ (0.09)	$ 0.33	$ -	$ -	$ -
Percentage of management fee offset	0%	55%	35%	58%	22%	25%	63%	37%	88%	48%	34%	29%	43%	452%	NA	NA	NA

*Fund exited – Fund level net IRR 14.5% and net TVPI, 2.0x

Review of Various Fee Offsets

Transaction fees: Fees received by the advisor or its affiliates for transactions that are consummated by the fund with respect to a particular portfolio company.

*Monitoring fees: F*ees received by the advisor or its affiliates in consideration for general ongoing advisory services provided in respect of fund investments excluding, specific types of advisory services (e.g., financial advisory services, asset/property management services, capital markets advisory services, etc.).

Directors' fees: Cash and non-cash directors' fees received by the advisor or its affiliates in connection with serving as directors on the board of portfolio companies.

Commitment fees: Fees received by the advisor or its affiliates in consideration for making available equity or debt commitments in respect of fund investments, regardless of whether such commitments are actually utilized by the fee payor (e.g., a fee on unused amounts in a revolving credit facility).

Break-up and topping fees: Fees received by the advisor or its affiliates relating to a potential investment by the fund that was not consummated and, in the case of topping fees, to the extent the transaction is not consummated as a result of another bidder.

Financial advisory fees: Fees received by the advisor or its affiliates in consideration for advisory services rendered to the underwriting syndicate and other financial advisory services in respect of fund investments.

Capital markets fees: Fees received by the advisor or its affiliates in consideration for advisory services rendered by the capital markets group in respect of underwriting services and financial advisory services to the underwriting syndicate.

	Fund B
Gross Management Fees	$7,992,124
Management Fee Offsets	(3,610,327)
Net Management Fees	4,381,798
Partnership Expenses	1,333,686
Net Fees & Expenses	$5,715,484
Management Fee Offsets:	
Transaction Fee Offsets	$1,469,997
Montoring Fees	1,235,076
Advisory Fees	100,641
Break-up Fees	775,107
Director's Fees	29,506
Total Management Fee Offsets	$3,610,327

ILPA Proposed Capital Account Details

- Best practices for Capital Account Statement should include:
  - **Detailed breakdown of Net Operating Income, including:**
    - Gross and net (offset) of Advisory Fees
    - Broken Deal Fees
    - Transaction & Deal Fees
    - Directors Fees
    - Monitoring Fees
    - Organizational Costs
    - Placement Fees
    - Capital Markets Fees
    - Voluntary Fee Waiver
    - Other Offsets
    - Management Fee Rebate
  - **Summary of GP & related party compensation, including:**
    - Management Fees – Net of Offsets, Waivers & Rebates
    - Voluntary Fee Waiver
    - Fees charged to Portfolio Investments, Subject to Offsets
    - Partnership Expenses – Paid to GP and Related Parties
    - Capitalized Transaction Fees – Paid to GP and Related Parties
    - Incentive Compensation – Paid (less rebates)
    - Incentive Compensation – Periodic Change in Accrued

ILPA Proposed Capital Account Details (continued)

Best Practices Fund II, LP ($)	
Beginning NAV	
Contributions - Cash & Deemed	
(Distributions - Cash & Deemed)	
Total Cash/Deemed Flows	
Net Operating Income (Expense):	
(Management Fees – Gross of Offsets, Waivers & Rebates)	% Offset to LPs
Advisory Fees	80%
Broken Deal Fees	80%
Transaction & Deal Fees	80%
Directors Fees	100%
Monitoring Fees	100%
Organizational Costs	80%
Placement Fees	80%
Capital Markets Fees	100%
Voluntary Fee Waiver	100%
Other Offsets	80%
Management Fee Rebate	n/a
(Management Fees – Net of Offsets, Waivers & Rebates)	
(Partnership Expenses)	
Interest Income	
Dividend Income	
(Interest Expense)	
Other	
Realized Gain/Loss	
Total Net Operating Income (Expense)	

Ending NAV Before Potential Incentive Compensation	
Accrued Potential Incentive Compensation	
Ending NAV After Potential Incentive Compensation	
Less Contributions	
Plus Recallable Distributions	
Less Expired Commitments	
+/- Other Unfunded Adjustment	
Ending Unfunded Commitment	
Summary of GP & Related Party Compensation:	
Management Fees - Net of Offsets, Waivers & Rebates	
Voluntary Fee Waiver	
Fees Charged to Portfolio Investments, Subject to Offsets	
Partnership Expenses - Paid to GP and Related Parties	
Capitalized Transaction Fees - Paid to GP and Related Parties	
Incentive Compensation - Paid (less rebates)	
Incentive Compensation - Periodic Change in Accrued	
Total GP & Related Party Compensation	
Unrealized Gain / (Loss)	
Capitalized Transaction Fees - Paid to Non-Related Parties	

New ILPA Template Discloses Key Economic Terms

V. Investment Office 2020 Vision

Objectives for Section V

- To review the Investment Office 2020 Vision
- To highlight CalPERS' recent progress in Private Equity
- To highlight ILPA and regulatory initiatives

CalPERS' Investment Office 2020 Vision

INVO Mission Statement

- Manage the CalPERS investment portfolio in a cost effective, transparent and risk-aware manner in order to generate returns to pay benefits.

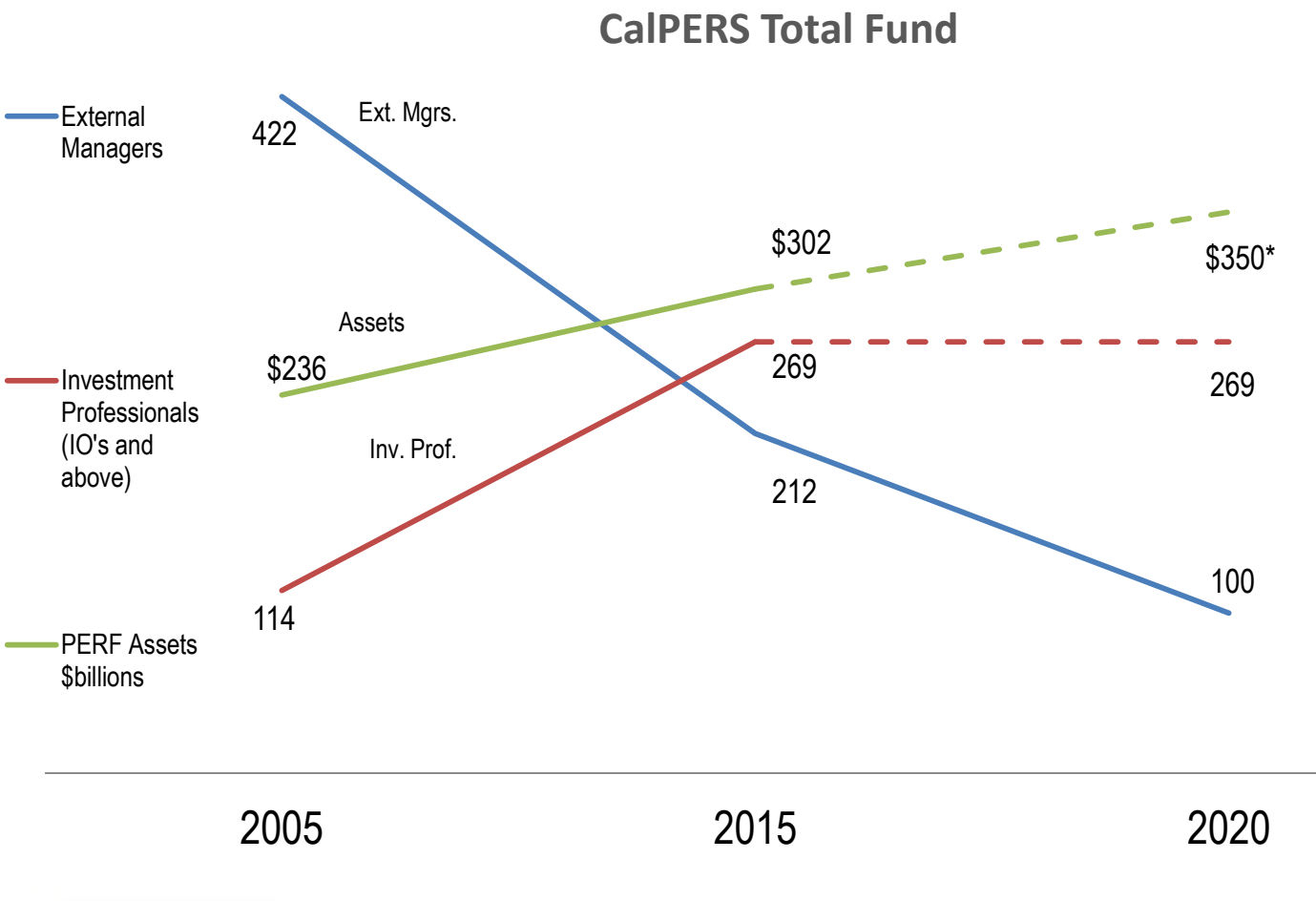
INVO Vision Statement

- The Investment Beliefs and CalPERS Core Values are the guiding principles underlying our investment decisions.
- We operate with a focus on repeatable, predictable, and scalable portfolios and practices.
- We seek alignment of interests with our primary stakeholders, our business partners and ourselves.
- We use clearly articulated performance, risk, and cost metrics to evaluate our value-add to the funds.
- Our investment and business activities are supported by a solid platform of effective risk management and controls.

How does Private Equity fit into the 2020 Vision?

- Important investment exposure for CalPERS
- Reduce complexity by concentrating portfolio with fewer managers
- Focus on cost effective structures with better alignment
- Continue to push for better transparency and disclosure
- Enhanced monitoring and governance

2020 Vision | Strategic Manager Selection & Monitoring

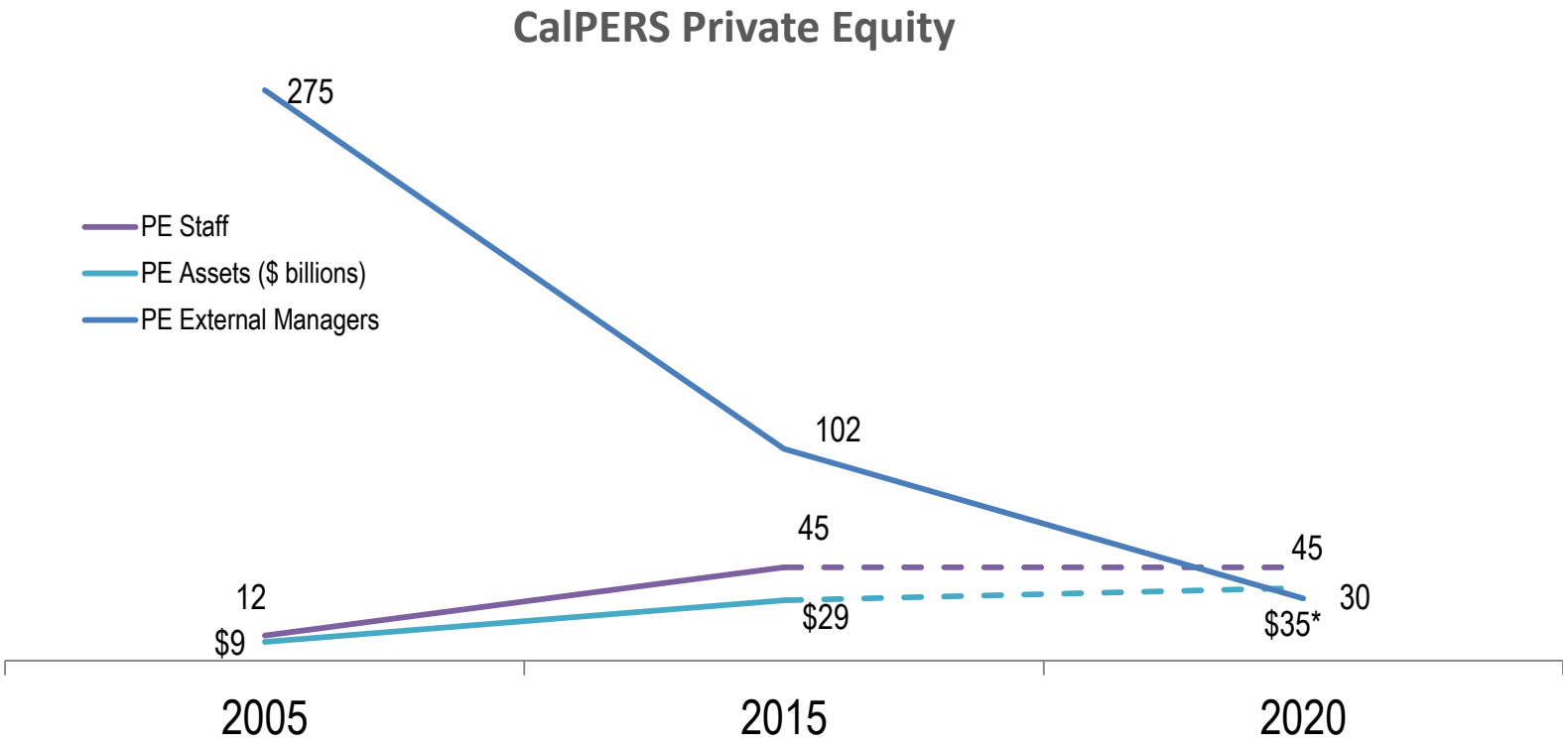


Key 2020 Vision Elements:

- Reduced complexity and risk
- Internal management and lower fees
- Enhanced monitoring and governance
- Fewer, more strategic partnerships

*Assumes 3% annual compound annual increase in fund size, PE portfolio size.

2020 Vision | Strategic Manager Selection & Monitoring



PE Manager / PE IP	~23	PE Manager / PE IP	~2	PE Manager / PE IP	~1
PE AUM / PE IP	$750M	PE AUM / PE IP	$644M	PE AUM / PE IP	$778M

*Assumes 3% annual compound annual increase in fund size, PE portfolio size.

CalPERS Private Equity Fee Rates
Fiscal Years 2012 – 2015*

Fiscal Year	Total Committed ($ in millions)	Management Fee Rate During Investment Period[1]	Management Fee Rate Post Investment Period[2]	Carried Interest[3]
2012-2013	$3,631	1.22%	0.91%	16.92%
2013-2014	$4,433	1.17%	1.03%	15.51%
2014-2015	$5,041	1.12%	0.86%	14.80%
TOTAL	**$13,105**			

**As of June 30, 2015*

1. *Calculated as the sum of: the investment period management fee rate for each investment multiplied by the commitment amount, divided by total commitments in the fiscal year*
2. *Calculated as the sum of :the post investment period management fee rate for each investment multiplied by the commitment amount, divided by total commitments in the fiscal year*
3. *Calculated as the sum of: the carried interest rate for each investment multiplied by the commitment amount, divided by total commitments in the fiscal year*

Institutional Limited Partners Association

- **Current Fee Transparency Initiative aims to:**
  - Identify and promote an enhanced and uniform approach to fee disclosures
  - Structure a response to adoption challenges for these new standards
  - Represent investors' interests in an array of parallel standard-setting efforts across the industry

June – July 2015	
Fee & Expense Template Revisions	Revised Partners Capital Account Statement, detail on specific management and performance fees
Third Party Reviews	Recommendations on the role of third parties in ensuring LPA compliance – audits/GP compliance reviews
Started August 2015	
Template Adoption	Baseline adoption assessment, identification of hurdles to adoption, key influencers, phase-in and other solutions
ILPA Principles Revisions	Drafting addendum guidance on fee/expense transparency, compliance and disclosures
Outreach	Coordinating outreach with media, peer associations, regulators, public

Support the ILPA initiative to create a standard PE cost disclosure protocol

Potential Regulatory Initiatives

Disclosure:

- Recent SEC activity has been focused on Private Equity managers and their disclosure to investors of certain fee and expense treatment
- Given this activity, one potential outcome could be a required filing that discloses all fees earned and expenses reimbursed by portfolio companies

Taxes:

- Heightened awareness of practices which convert ordinary income into capital gains (i.e. management fee waiver) could be restricted by IRS

State and/or Federal Legislation:

- Competing state and federal regulations are being proposed

Conclusion- Key Characteristics of Private Equity

Benefit	Characteristic	Challenge
• Higher return profile than global equity • Expansion of investment universe, not available through public markets	**Return**	• Wide dispersion of manager performance • Funds are "blind pools" • Manager selection and persistence drives performance
• Less than 100% correlated with global equity	**Risk**	• Infrequent and estimated valuations • Determining appropriate benchmark
• Investing in long term strategies	**Long term commitment**	• Controlling exposure • Expensive secondary market • Investment timing dependent on manager fundraising
• Hurdle rates may align interest with value creation	**Cost**	• Complex, higher, and non-transparent fees • High gross to net spreads
• Control investors may receive return premium	**Complexity**	• Multiple dimensions of skills needed (i.e., manager selection, legal structure, accounting) • Challenge to predict cash flows • Idiosyncratic contracts- "buyer beware"

Appendix Slides

Appendix Section I- Private Equity Staff

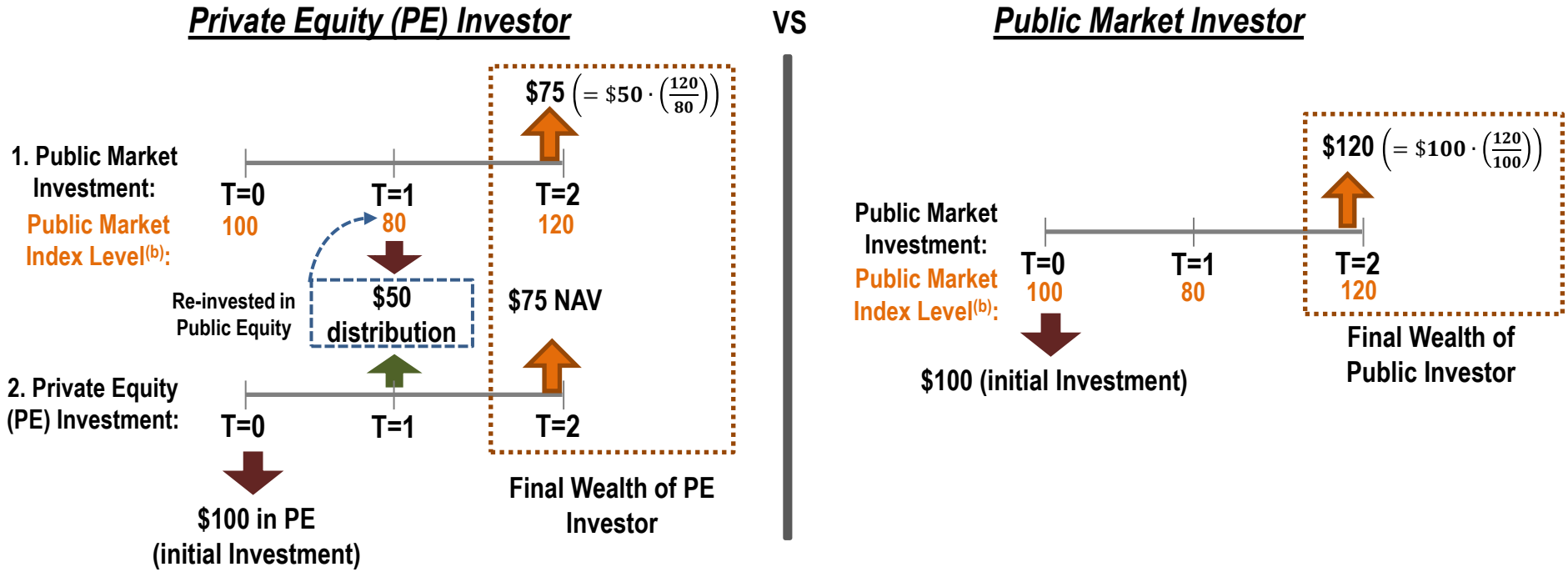
Kaplan-Schoar Public Market Equivalent (PME[a]) Analysis

- The KS-PME, represented as a multiple, indicates how much the final wealth of a private equity (PE) investor is relative to an investor in the public market reference over the investment time horizon.

- A KS-PME that is greater than 1 indicates the private equity investment outperforms the public market reference and vice versa.

(a) Kaplan, Steven N. and Antoinette Schoar, 2005, Private equity performance: Returns, persistence, and capital flows, Journal of Finance 55, 1791–1823.

Kaplan-Schoar Public Market Equivalent (PME[a]) Analysis



$$\text{KS-PME} = \frac{\text{Final Wealth of PE Investor}}{\text{Final Wealth of Public Investor}}$$

$$\text{Value Add} = \text{Final Wealth of PE Investor} - \text{Final Wealth of Public Investor}$$

$$\text{KS-PME} = \frac{\$75 + \$75}{\$120} = 1.25 \qquad \text{Value Add} = (\$75 + \$75) - \$120 = \$30$$

(a) Kaplan, Steven N. and Antoinette Schoar, 2005, Private equity performance: Returns, persistence, and capital flows, Journal of Finance 55, 1791–1823.

(b) Public market index is the public market reference total return index

Return Difference Approach

- Estimates the value added by taking the difference between the Private Equity (PE) average balance each month and multiplying the balance by the difference in the PE return and the global equity reference.

- Simple illustration of the approach:

Period	PE Avg. Balance	PE Return (%) (1)	Public Return (%) (2)	Diff. of Returns (1)−(2)	Value Added
1	$10,000,000	-0.43%	-1.52%	1.09%	$109,000
2	$12,000,000	1.56%	-2.18%	3.74%	$448,800
				Total Value Add (Sum of All Value Add):	**$557,800**

Optimized Portfolio without Private Equity[(a)]

		Targeting Expected Return		Targeting Expected Volatility	
Asset Class	Policy Portfolio	Optimal Allocation w/o Private Equity	Change From Policy Portfolio	Optimal Allocation w/o Private Equity	Change From Policy Portfolio
Global Equity	47%	67%	20%	61%	14%
Private Equity	12%	0%	(12%)	0%	(12%)
Fixed Income	19%	15%	(4%)	17%	(2%)
Real Estate	11%	11%	0%	11%	0%
Infra. & Forest	3%	3%	0%	3%	0%
Inflation Assets	6%	2%	(4%)	6%	0%
Liquidity	2%	2%	0%	2%	0%
Expected Compound Return (1-10 yrs.)	7.15%	7.14%	(0.01%)	6.90%	(0.25%)
Expected Blended Return (1-60 yrs.)	7.59%[(b)]	7.54%[(c)]	(0.05%)	7.36%	(0.23%)
Expected Volatility	11.76%	12.70%	0.94%	11.76%	0.00%

- Maintaining similar expected return, increases the allocation to Global Equity by 20% and the volatility by 0.94%
- Maintaining similar portfolio volatility, increases the allocation to Global Equity by 14% and reduces the expected return by 0.25%

(a) Using the 2013 capital market assumptions
(b) Blended Return based on updated projected benefit payments provided by ACTO that reflect new demographic information that differs from the returns presented during the 2013 ALM Workshop
(c) Optimization process unable to achieve the same blended return as the policy portfolio without any allocation to the private equity asset class given the CMA constraints

2013 CMAs and Investment Constraints

Asset Class	Arithmetic E(R)	Compound E(R)	Volatility (St. Dev.)	Cash Yield	Correlations								Constraints	
					Global Equity	Private Equity	Fixed Income	Real Estate	Infra. & Forest	Inflation Assets	Liquid	ARS	Floor	Cap
Global Equity	9.15	7.75	17.40	2.73	1.00	0.73	0.21	0.37	0.27	0.03	0.00	0.50	0%	100%
Private Equity	12.15	9.33	25.00	0.00	0.73	1.00	0.12	0.38	0.20	0.01	0.00	0.35	0%	12%
Fixed Income	3.73	3.49	7.00	3.70	0.21	0.12	1.00	0.13	0.20	0.25	0.50	0.06	15%	100%
Real Estate	7.91	7.00	14.00	2.00	0.37	0.38	0.13	1.00	0.50	0.10	0.05	0.27	0%	11%
Infra. & Forest.	7.56	7.00	11.00	2.50	0.27	0.20	0.20	0.50	1.00	0.20	0.20	0.20	1%	3%
Inflation Assets	3.20	2.95	7.25	0.88	0.03	0.01	0.25	0.10	0.20	1.00	0.14	0.00	2%	6%
Liquidity	2.00	1.95	3.00	2.02	0.00	0.00	0.50	0.05	0.20	0.14	1.00	0.10	2%	100%
ARS	6.12	5.89	7.00	0.00	0.50	0.35	0.06	0.27	0.20	0.00	0.10	1.00	0%	2%

Appendix Section I- Josh Lerner

Enormous interest on part of LPs on bypassing GPs by investing directly

- Sovereign funds, family offices, funds-of-funds, endowments, and even pension funds…
  - Preqin, 2015:
    - 56% of investors expect to increase their allocations to co-investments (4% expect to reduce).
    - 29% intend to make more direct investments on a proprietary basis.
    - 28% will pursue more direct investments on the secondary market.
- More broadly, there are many assertions but little evidence.

Source: *Preqin Investor Outlook: Alternative Assets*, 2015.

June 24, 2012 5:35 pm

Direct approach challenges private equity

Preqin Special Report: LP Appetite for Private Equity Co-Investments

USS targets direct infrastructure

Rich Families Cut Back on Buyout Firms for Direct Deals

WALL STREET 6/04/2014 @ 3:09PM | 652 views

Co-Investment Catching On In European Private Equity

CalPERS and OMERS crush it on direct investments

Abu Dhabi sovereign wealth fund eyes direct investment in Indian real estate

NY State: Interested In More Direct Private Equity Investments

China's CIC Buys 8.68% Stake in U.K.'s Thames Water Utilities

Canadian pension funds prefer direct route for investment

South Carolina to Start an Investment Firm for Its Private Equity Bets

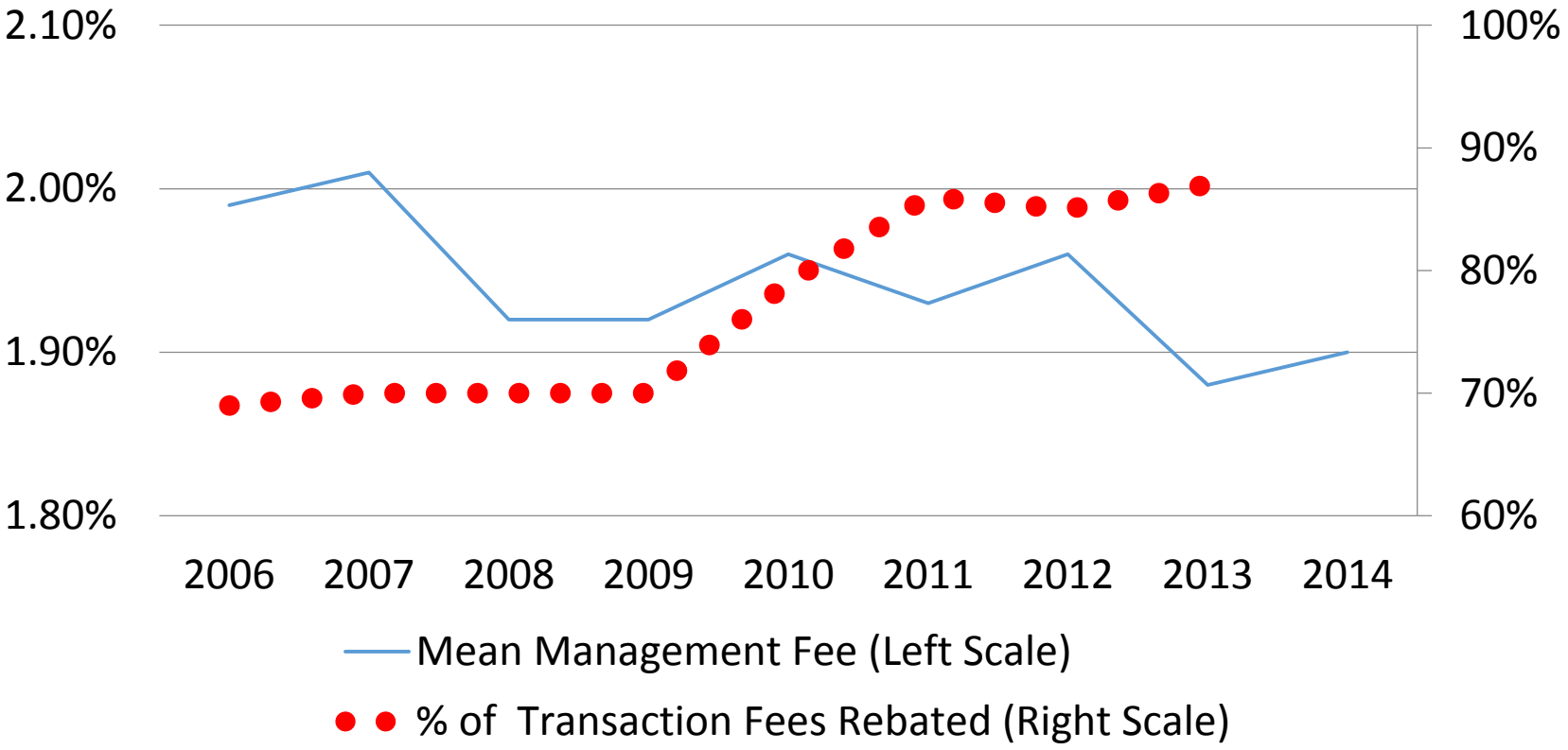
Easy to understand motivation

Average payments ***per partner per fund***, based on 238 PE/VC partnerships ($MMs):

	VC	LBO
Carried interest	6.5	10.1
Management fees	10.6	18.5
Other fees		4.1
Total	**17.1**	**32.7**

Source: Andrew Metrick and Ayako Yasuda, "The Economics of Private Equity Funds," *The Review of Financial Studies* 23 (6), June 2010.

Adjustment post-crisis has been slow



Source: *2015 Preqin Global Private Equity & Venture Capital Report*, data for % of transaction fees rebated was not available for 2014.

And hidden fees are a major issue

- "When we have examined how fees and expenses are handled by advisers to private equity funds, we have identified what we believe are violations of law or material weaknesses in controls over 50% of the time. *This is a remarkable statistic*."
  - Andrew J. Bowden, Director, Office of Compliance Inspections and Examinations, U.S. Securities and Exchange Commission, "Spreading Sunshine in Private Equity," May 6, 2014.

A initial effort to assess

- The data is proprietary: Collaboration of 7 large LPs.
  - Fang, et al. [2015]
- Complete cash flows for 390 direct investments made by a set of large institutions between 1991 and 2011:
  - $23 B capital invested ($14B (61%) co-investments, $9B solo investments).
  - Cash flows are net of fees (relevant for co-investments).
  - In some analyses, back out also estimated costs of running programs.
- Seven investors are younger and larger than typical LP; probably more sophisticated.
- Distribution of outcomes of deals (e.g., IPO, bankruptcy) look similar to direct deals in CapitalIQ.

Source: Lily Fang, Victoria Ivashina, and Josh Lerner, "The Disintermediation of Financial Markets: Direct Investing in Private Equity," *Journal of Financial Economics* 116 (1), April 2015.

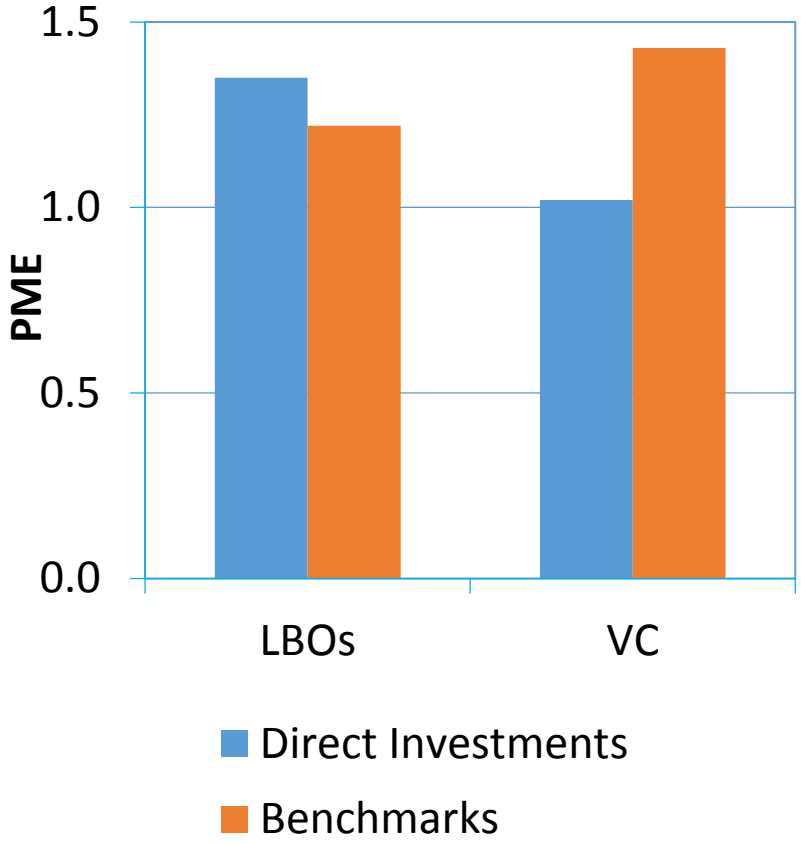
One tricky issue

Traditional partnership investment:	Direct investment:
Gross Return	
- Fee	- Fee (different structure than in traditional investment)
= Net Return (Preqin, Thomson, and Burgiss)	= Net Return (Our data)
- Administrative cost (0.11% of committed capital incurred annually up to 5 years)	- In-house investment cost and administration costs (0.91% of committed capital incurred annually up to 5 years)
= Imputed net return ("net-net")	

Source: Lily Fang, Victoria Ivashina, and Josh Lerner, "The Disintermediation of Financial Markets: Direct Investing in Private Equity," *Journal of Financial Economics* 116 (1), April 2015.

Comparing performance

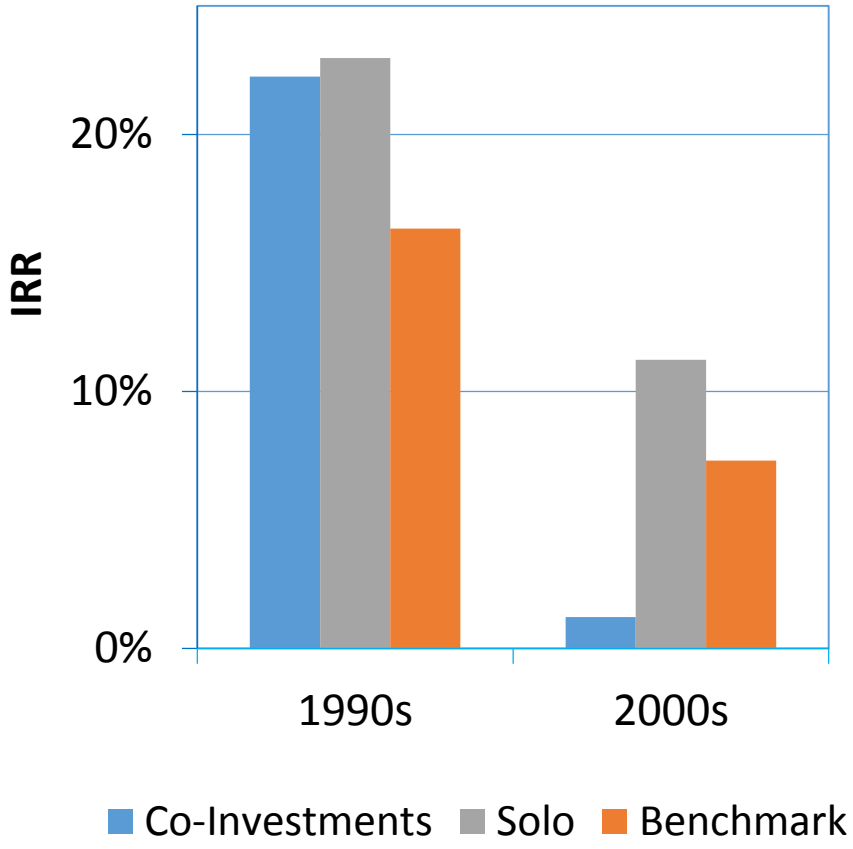
- "Best" measure: performance relative to public markets (PME):
  - Direct investments beat public market.
    - But so do PE funds.
  - Better to compare direct investment PMEs to funds':
    - Direct LBOs outperform funds in 1990s, but less so in 2000s.
    - Direct venture capital underperforms in 1990s; and even more in 2000s.



Source: Lily Fang, Victoria Ivashina, and Josh Lerner, "The Disintermediation of Financial Markets: Direct Investing in Private Equity," *Journal of Financial Economics* 116 (1), April 2015. The data set used as a benchmark was from Robert S. Harris, Tim Jenkinson, and Steven Kaplan, "Private Equity Performance: What Do We Know?" *Journal of Finance* 69 (5), October 2014.

Comparing performance

- IRRs and multiples similar to PMEs:
  - Little evidence of outperformance relative to funds.
  - Deterioration of relative performance in 2000s.
    - Especially severe for co-investments.
  - And venture capital directs do particularly poorly.



Source: Lily Fang, Victoria Ivashina, and Josh Lerner, "The Disintermediation of Financial Markets: Direct Investing in Private Equity," *Journal of Financial Economics* 116 (1), April 2015. The benchmark used was Preqin U.S. Private Equity.

Why poor co-investment performance?

- Bad timing:
  - Concentrated in hot markets about to turn south.
  - Even though stated goal is often to avoid herd-like behavior!
- Big deals:
  - Median deal is 3x the size of the deals done by same GPs around the same time.
- Bad deals:
  - Adverse selection.

When do solo deals do well?

- Local deals.
- Buyout deals.
- Deals when economy is relatively robust (less need for intervention?).

→ "Plain vanilla" transactions when better information, less need for special skills?

Raises many questions about going it alone

- Warning: This is a backwards-looking sample!
- But numerous cautions to LPs considering such initiatives:
  - Deterioration of performance in 2000s.
  - Success focused in places where information advantage:
    - Suggests limits to scaling.
  - Relatively limited evidence of success, even among most sophisticated.

Appendix Section IV

Appendix Section IV: Duff & Phelps

Appendix - A

Management Fees and Profit Interest Allocation

Performance Fees: The "Waterfall" Calculation (Scenario 1)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$171.0 LP / $9.0 GP
Exit assumption	2.2X	

2.0% Management Fee; 80/20 Profit Interest

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Total
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
	-	-	-	-	-	-
Total	$ (175.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash (Invested)/Returned	**$ (175.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ 339.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 56.8**

(in millions USD) — **Portfolio Company XYZ**

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	396.8	444.0	411.1	449.2	491.4	540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	42.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 401.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 396.0

Waterfall

LP	*GP*	
$ 376.2	$ 19.8	Exit Value (1)
(171.0)		Return of Capital
(1.0)		Return of Fund Expenses
(19.0)		Return of Management Fees
185.2		Distributable Profits
148.2		LP Gain Allocation (80.0%)
	37.0	GP Gain Allocation (20.0%)
$ 339.2	$ 56.8	

12.65% LP IRR

17.08% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 19.0 + 148.2) = 339.2

(1) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less net debt less transaction cost; GP receives 5% of proceeds.

Note: The assumptions above are presented solely for illustrative purposes.

Performance Fees: The "Waterfall" Calculation (Scenario 2)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$180.0 LP due to fee waiver
Exit assumption	2.2X	

2.0% Management Fee; 85/15 Profit Interest

(in millions USD)

Limited Partner Cash Flows

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Fee Waiver (1)						-
Total	$ (175.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash (Invested)/Returned	**$ (175.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ 348.4**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ -**					**$ 47.6**

Waterfall

LP	*GP*	
$ 376.2	$ 19.8	Exit Value (1)
(171.0)		Return of Capital
(1.0)		Return of Fund Expenses
(19.0)		Return of Net Mgt. Fees
185.2		Distributable Profits
157.4		LP Gain Allocation (85.0%)
	27.8	GP Gain Allocation (15.0%)
$ 348.4	$ 47.6	

13.27% LP IRR

17.08% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 19.0 + 157.4) = 348.4

(1) Assumes same exit value in Scenario 1.

Note: The assumptions above are presented solely for illustrative purposes.

Performance Fees: The "Waterfall" Calculation (Scenario 1)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$171.0 LP / $9.0 GP
Exit assumption	2.2X	

1.0% Management Fee; 80/20 Profit Interest

(in millions USD)

Limited Partner Cash Flows

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(1.9)	(1.9)	(1.9)	(1.9)	(1.9)	(9.5)
	-	-	-	-	-	-
Total	$ (173.1)	$ (2.1)	$ (2.1)	$ (2.1)	$ (2.1)	$ (181.5)
LP Cash In/(Out)	**$ (173.1)**	**$ (2.1)**	**$ (2.1)**	**$ (2.1)**	**$ (2.1)**	**$ 337.3**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 58.7**

Waterfall

LP	*GP*	
$ 376.2	$ 19.8	Exit Value (1)
(171.0)		Return of Capital
(1.0)		Return of Fund Expenses
(9.5)		Return of Management Fees
194.7		Distributable Profits
155.8		LP Gain Allocation
-	38.9	GP Gain Allocation
$ 337.3	$ 58.7	

13.47% LP IRR

17.08% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 9.5 + 155.8) = 337.3

(1) Assumes same exit value in Scenario 1.

Note: The assumptions above are presented solely for illustrative purposes.

Appendix - B

Fee Waivers

Fee Waivers

Numerical Example – Scenario 1 (No Fee Waiver; 2.2X Exit)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$171.0 LP / $9.0 GP
Exit assumption	2.2X	

Without Fee Waiver

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Total
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Fee Offset	-	-	-	-	-	-
Total	$ (175.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash (Invested)/Returned	**$ (175.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ 339.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 56.8**

(in millions USD) — **Portfolio Company XYZ**

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	396.8	444.0	411.1	449.2	491.4	540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	42.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 401.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 396.0

Waterfall

LP	*GP*	
$ 376.2	$ 19.8	Exit Value (1)
(171.0)		Return of Capital
(1.0)		Return of Fund Expenses
(19.0)		Return of Management Fees
185.2		Distributable Profits
148.2		LP Gain Allocation (80.0%)
	37.0	GP Gain Allocation (20.0%)
$ 339.2	$ 56.8	

12.65% LP IRR

17.08% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 19.0 + 148.2) = 339.2

(1) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less net debt less transaction cost; GP receives 5% of proceeds.

Fee Waivers

Numerical Example – Scenario 2 (GP Waives Management Fees Equal to GP Capital Commitment; 2.2X Exit)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$180.0 LP due to fee waiver
Exit assumption	2.2X	

With Fee Waiver

(in millions USD)

Limited Partner Cash Flows

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (180.0)	$ -	$ -	$ -	$ -	$ (180.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Fee Waiver (1)	3.8	3.8	1.4			9.0
Total	$ (180.2)	$ (0.2)	$ (2.6)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash (Invested)/Returned	**$ (180.2)**	**$ (0.2)**	**$ (2.6)**	**$ (4.0)**	**$ (4.0)**	**$ 339.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ -**					**$ 56.8**

Waterfall

LP	*GP*	
$ 376.2	$ 19.8	Exit Value (1)
(180.0)		Return of Capital
(1.0)		Return of Fund Expenses
(10.0)		Return of Net Mgt. Fees
185.2		Distributable Profits
148.2		LP Gain Allocation (80.0%)
	37.0	GP Gain Allocation (20.0%)
$ 339.2	$ 56.8	

12.56% LP IRR

17.08% Fund IRR

LP Cash Returned

(180.0 + 1.0 + 10.0 + 148.2) = 339.2

(1) Assumes GP waives management fees equal to GP Capital Commitment

(2) Assumes same exit value in Scenario 1.

Fee Waivers

Numerical Example – Scenario 3 (No Fee Waiver; 1.2X Exit)

Total Fund Size	$ 200.0	95.0% LP / 5.0% GP
Investment	$ 180.0	$171.0 LP / $9.0 GP
Exit assumption	1.2X	

Without Fee Waiver

Limited Partner Cash Flows

(in millions USD)						
Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Fee Waiver	-	-	-	-	-	-
Total	$ (175.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash In/(Out)	**$ (175.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ 205.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 216.0**
GP Cash (Invested)/Returned	**$ -**					**$ 10.8**

Portfolio Company XYZ

(in millions USD)						
Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 62.0	$ 60.0	$ 61.0	$ 62.0	$ 65.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.2x	6.4x	6.4x
Implied Enterprise Value	$ 396.8	$ 403.0	$ 366.0	$ 378.2	$ 396.8	$ 416.0
Debt	(226.8)	(205.0)	(215.0)	(220.0)	(216.0)	(216.0)
Excess Cash	5.0	10.0	22.0	23.5	21.0	21.0
Equity Value	$ 175.0	$ 208.0	$ 173.0	$ 181.7	$ 201.8	$ 221.0
Transaction Costs	5.0					(5.0)
Cost/Exit Value	$ 180.0					$ 216.0

Waterfall

	LP	*GP*	
	$ 205.2	$ 10.8	Exit Value (1)
	(171.0)		Return of Capital
	(1.0)		Return of Fund Expenses
	(19.0)		Return of Management Fees
	14.2		Distributable Profits
	14.2		LP Gain Allocation
	-		GP Gain Allocation
	$ 205.2	$ 10.8	

1.51% LP IRR

3.71% Fund IRR

LP Cash Returned

(171.0 + 1.0 + 19.0 + 14.2) = 205.2

Note: Hurdle not met; 100.0% of gain to LP.

(1) Exit value assumes 2016E EBITDA of $65.0MM times EBITDA multiple of 6.1x less net debt less transaction costs; GP receive 5% of proceeds

Fee Waivers

Numerical Example – Scenario 4 (GP Waives Management Fees Equal to GP Capital Commitment; 1.2X Exit)

Total Fund Size	$	200.0	95 LP / 5 GP
Investment	$	180.0	180 LP due to fee waiver
Exit assumption		1.14x	

With Fee Waiver

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (180.0)	$ -	$ -	$ -	$ -	$ (180.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Fee Waiver (1)	3.8	3.8	1.4			9.0
Total	$ (180.2)	$ (0.2)	$ (2.6)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash In/(Out)	**$ (180.2)**	**$ (0.2)**	**$ (2.6)**	**$ (4.0)**	**$ (4.0)**	**$ 205.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 216.0**
GP Cash (Invested)/Returned	**$ -**					**$ 10.8**

Waterfall

LP	*GP*	
$ 205.2	$ 10.8	Exit Value (2)
(180.0)		Return of Capital
(1.0)		Return of Fund Expenses
(10.0)		Return of Net Management Fees
$ 14.2		Distributable Profits
14.2		LP Gain Allocation (80.0%)
-		GP Gain Allocation (20.0%)
205.2	10.8	

1.50% LP IRR

3.71% Fund IRR

LP Cash Returned
(180.0 + 1.0 + 10.0 + 14.2) = 205.2

Note: Hurdle not met; 100.0% of gain to LP.

(1) Assumes GP waives Management Fees equal to GP Commitment.
(2) Assumes same exit value in Scenario 3.

Appendix - C

Fee Offsets

Fee Offsets

Numerical Example – Scenario 1 (No Fee Offset)

Total Commitment	$ 200.0	95.0% LP/ 5.0% GP
Investment	$ 180.0	$ 171.0 LP / $ 9.0 GP
Exit Assumption	2.2x	2.0% Management Fee

Without Fee Offset

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Management Fee Offset	-	-	-	-	-	-
Total	$ (175.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (4.0)	$ (191.0)
LP Cash (Invested)/Returned	**$ (175.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ (4.0)**	**$ 339.2**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 56.8**

(in millions USD) — **Portfolio Company XYZ**

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
Monitoring Fees	-	-	-	-	-	-
Adjusted EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	$ 396.8	$ 444.0	$ 411.1	$ 449.2	$ 491.4	$ 540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	42.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 401.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 396.0

Waterfall

	LP	*GP*	
	$ 376.2	$ 19.8	Exit Value (1)
	(171.0)		Return of Capital
	(1.0)		Return of Fund Expenses
	(19.0)		Return of Management Fees
	185.2		Distributable Profits
	148.2		LP Gain Allocation (80.0%)
		37.0	GP Gain Allocation (20.0%)
	$ 339.2	$ 56.8	

12.65% LP IRR

17.08% Fund IRR

LP Cash Returned

(171.0 + 1.0 + 19.0 + 145.2) = 339.2

LP Cash in	LP Cash Out	Cash Gain
191.0	339.2	148.2
		77.6%

(1) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less net debt less transaction cost; GP receives 5.0% of proceeds.

Fee Offsets

Numerical Example – Scenario 2 (With Partial Fee Offset)

Total Commitment	$ 200.0	95.0% LP/ 5.0% GP
Investment	$ 180.0	$ 171.0 LP / $ 9.0 GP
Exit Assumption	2.2x	2.0% Management Fee

With Partial Fee Offset

Limited Partner Cash Flows

(in millions USD)

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Management Fee Offset (1)	1.9	1.9	1.9	1.9	1.9	9.5
Total	$ (173.1)	$ (2.1)	$ (2.1)	$ (2.1)	$ (2.1)	$ (181.5)
LP Cash (Invested)/Returned	**$ (173.1)**	**$ (2.1)**	**$ (2.1)**	**$ (2.1)**	**$ (2.1)**	**$ 337.3**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 58.7**

Portfolio Company XYZ

(in millions USD)

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
Monitoring fees (3)	(3.7)	(4.0)	(4.0)	(4.1)	(4.2)	-
Adjusted EBITDA	$ 58.3	$ 64.3	$ 63.4	$ 65.0	$ 66.0	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	$ 396.8	$ 444.0	$ 411.1	$ 449.2	$ 491.4	$ 540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	42.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 401.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 396.0

Waterfall

	LP	*GP*	
	$ 376.2	$ 19.8	Exit Value (2)
	(171.0)		Return of Capital
	(1.0)		Return of Fund Expenses
	(9.5)		Return of Management Fees, Net of Offsets
	194.7		Distributable Profits
	155.8		LP Gain Allocation (80.0%)
		38.9	GP Gain Allocation (20.0%)
	$ 337.3	$ 58.7	

13.47% LP IRR

17.08% Fund IRR

LP Cash Returned

(171.0 + 1.0 + 9.5+ 155.8) = 337.3

LP Cash in	LP Cash Out	Cash Gain
181.5	337.3	155.8
		85.8%

(1) Assumes 50.0% of management fees are offset.

(2) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less net debt less transaction cost; GP receives 5.0% of proceeds.

(3) Service agreement stipulates an annual monitoring fee of 6.0% of EBITDA.

Fee Offsets

Numerical Example – Scenario 3 (With Full Fee Offset)

Total Commitment	$ 200.0	95.0% LP/ 5.0% GP
Investment	$ 180.0	$ 171.0 LP / $ 9.0 GP
Exit Assumption	2.2x	2.0% Management Fee

With Full Fee Offset

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Management Fee Offset (1)	3.8	3.8	3.8	3.8	3.8	19.0
Total	$ (171.2)	$ (0.2)	$ (0.2)	$ (0.2)	$ (0.2)	$ (172.0)
LP Cash (Invested)/Returned	**$ (171.2)**	**$ (0.2)**	**$ (0.2)**	**$ (0.2)**	**$ (0.2)**	**$ 335.4**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 396.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 60.6**

(in millions USD) — **Portfolio Company XYZ**

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
Monitoring fees (3)	(4.0)	(4.4)	(4.4)	(4.5)	(4.6)	-
Adjusted EBITDA	$ 58.0	$ 63.9	$ 63.0	$ 64.6	$ 65.6	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	$ 396.8	$ 444.0	$ 411.1	$ 449.2	$ 491.4	$ 540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	42.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 401.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 396.0

Waterfall

	LP	*GP*	
	$ 376.2	$ 19.8	Exit Value (2)
	(171.0)		Return of Capital
	(1.0)		Return of Fund Expenses
	-		Return of Management Fees, Net of Offsets
	204.2		Distributable Profits
	163.4		LP Gain Allocation (80.0%)
		40.8	GP Gain Allocation (20.0%)
	$ 335.4	$ 60.6	

14.32% LP IRR

17.08% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 163.4) = 335.4

LP Cash in	LP Cash Out	Cash Gain
172.0	335.4	163.4
		95.0%

(1) Assumes LPs receive portfolio company monitoring fees capped at 100.0% of management fees.
(2) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less net debt less transaction costs; GP receives 5.0% of proceeds.
(3) Service agreement stipulates an annual monitoring fee of 6.5% of EBITDA.

Fee Offsets

Numerical Example – Scenario 4 (With Full Fee Offset; Accelerated Fees @ Exit Not Share with LP)

Total Commitment	$ 200.0	95% LP/ 5% GP
Investment	$ 180.0	$ 171 LP / $ 9 GP
Exit Assumption	2.2x	2% Management Fee

With Fee Offset; Accelerated Fees @ Exit Not Shared

(in millions USD) — **Limited Partner Cash Flows**

Year	2011	2012	2013	2014	2015	Cash Out
Investment	$ (171.0)	$ -	$ -	$ -	$ -	$ (171.0)
Fund Expenses	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(1.0)
Management Fee	(3.8)	(3.8)	(3.8)	(3.8)	(3.8)	(19.0)
Management Fee Offset (1)	3.8	3.8	3.8	3.8	3.8	19.0
Total	$ (171.2)	$ (0.2)	$ (0.2)	$ (0.2)	$ (0.2)	$ (172.0)
LP Cash (Invested)/Returned	**$ (171.2)**	**$ (0.2)**	**$ (0.2)**	**$ (0.2)**	**$ (0.2)**	**$ 312.6**
Total Cash (Invested)/Returned	**$ (180.0)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 366.0**
GP Cash (Invested)/Returned	**$ (9.0)**					**$ 53.4**

(in millions USD) — **Portfolio Company XYZ**

Year	2011	2012	2013	2014	2015	2016E
EBITDA	$ 62.0	$ 68.3	$ 67.4	$ 69.1	$ 70.2	$ 75.0
Monitoring fees (3)	(4.0)	(4.4)	(4.4)	(4.5)	(4.6)	-
Adjusted EBITDA	$ 58.0	$ 63.9	$ 63.0	$ 64.6	$ 65.6	$ 75.0
EBITDA Multiple	6.4x	6.5x	6.1x	6.5x	7.0x	7.2x
Implied Enterprise Value	$ 396.8	$ 444.0	$ 411.1	$ 449.2	$ 491.4	$ 540.0
Debt	(226.8)	(205.0)	(215.0)	(190.0)	(181.0)	(181.0)
Excess Cash	5.0	10.0	22.0	35.0	42.0	12.0
Equity Value	$ 175.0	$ 249.0	$ 218.1	$ 294.2	$ 352.4	$ 371.0
Transaction Costs	*5.0*					*(5.0)*
Cost/Exit Value	$ 180.0					$ 366.0

Waterfall

	LP	*GP*	
	$ 347.7	$ 18.3	Exit Value (2)
	(171.0)		Return of Capital
	(1.0)		Return of Fund Expenses
	-		Return of Management Fees, Net of Offsets
	175.7		Distributable Profits
	140.6		LP Gain Allocation (80.0%)
		35.1	GP Gain Allocation (20.0%)
	$ 312.6	$ 53.4	

12.72% LP IRR

15.25% Fund IRR

LP Cash Returned
(171.0 + 1.0 + 140.6) = 312.6

LP Cash in	LP Cash Out	Cash Gain
172.0	312.6	140.6
		81.7%

(1) Assumes LPs receive portfolio company monitoring fees capped at 100.0% of management fees.
(2) Exit value assumes 2016E EBITDA of $75.0MM times EBITDA multiple of 7.2x less debt plus excess cash, net of GP accelerated monitoring fees of $30.0MM, less transaction costs; GP receives 5.0% of proceeds.
(3) Service agreement stipulates an annual monitoring fee of 6.5% of EBITDA.

Appendix Section IV: CalPERS Staff

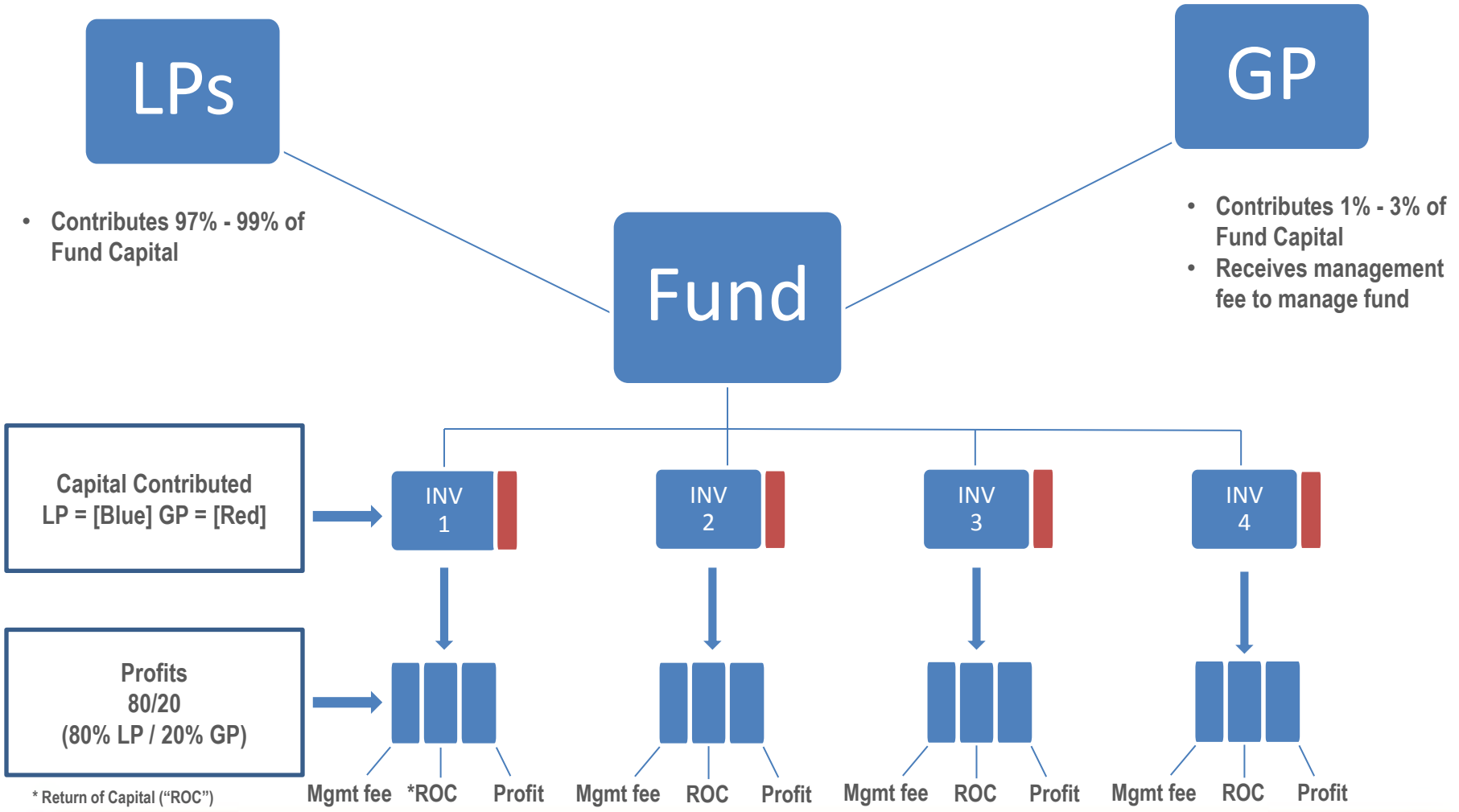
Key Limited Partnership Terms

Carried Interest ("Carry," or "Profit Share")	The GP's share of the profits of the fund's investments (typically 20%), as articulated in the LPA
Catch Up	Brings the GP carried interest up to 20% of all gains, once the LP hurdle has been achieved
Clawback	GP carried interest received that is required to be returned to LPs due to failure of the Fund to achieve the hurdle rate
Commingled ("pooled") Fund	A common partnership structure, which consisting of assets from various accounts that are blended together
Contribution ("Drawdown," or "Paid-in Capital")	Capital deployed by LPs, to fulfill capital call notices submitted by GPs, to fund new or follow-on investments, or otherwise pay for fees and expenses of the fund
Deal-by-deal ("American") Waterfall	GP often receives carried interest after capital associated with each investment, including fees and expenses, is returned to LPs, regardless of performance of other investments
Distribution Waterfall	Refers to the priority of cash flows returned to investors in a PE fund as articulated in the LPA
European Waterfall	GP receives carried interest only after all capital, including fees and expenses, is returned to LPs
General Partner ("GP")	The investment manager responsible for managing the activities of a fund. The GP invests its own money in the fund alongside the LPs (typically about 2%), but earns a greater return in the form of carried interest if the fund outperforms the hurdle rate

Key Limited Partnership Terms (continued)

Key Person	The investment professionals expected to generate outsized returns for a fund, and specified in the LPA. Should a key man discontinue work on the fund, certain LPA-stipulated events occur, commonly an immediate end to the investment period
Limited Partnership Agreement (“LPA”)	The contract that governs the terms of a fund. Heavily negotiated and agreed to by LPs and GPs, the terms lay out the obligations and responsibilities (and any potential recourse) for all parties.
Limited Partner (“LP”)	Institutional or high net worth investors that invest capital into a fund for the GP to manage according to the terms of the LPA
Limited Partnership Agreement (“LPA”)	The contract that governs the terms of a fund. Heavily negotiated and agreed to by LPs and GPs, the terms lay out the obligations and responsibilities (and any potential recourse) for all parties.
Management Fee	A periodic payment that is paid by LPs to the GP for investment and portfolio management services; typically investment advisory services as well as administrative services.
Preferred Return (“Hurdle Rate”)	The minimum return to investors (not guaranteed) before carried interest is permitted, as articulated in the LPA.
Vintage Year	The date associated with the start of a particular fund; typically based on the year of the first cash flow or the legal inception of the fund (can vary for the same fund depending on the methodology used)

Typical Private Equity Fund Structure



* Return of Capital ("ROC")

Deal-by-Deal Waterfall

- GP takes its share of the profit interest on each investment
  - LP often receives all capital contributions (including fees and expenses) associated with the investment being sold and the preferred return (on realized and written off investments), before any remaining profit is split between the LPs and the GP
- Must achieve preferred return ("hurdle rate") before the GP can earn profit interest
  - Preferred return, for example 8%, compounded annually and on all realized capital, (including permanent write-offs and write-downs) and costs
- Majority of fees and expenses front-end loaded during the commitment period
  - Return of all fees and expenses generally back-end weighted
- GP friendly Distribution Waterfall creates clawback risk
  - Greater risk of clawback if GP values assets aggressively early in the fund life
  - LPs attempt to mitigate this risk via a clawback, however the clawback obligation is typically net of taxes

European Waterfall

- Returns 100% of called capital (including all fees and expenses) plus a preferred return, for example 8%, compounded annually before the LPs and GP spilt any remaining profit

- Majority of fees and expenses front-end loaded during the commitment period
  - Shorter duration to LP reimbursement of all fees and expenses relative to deal by deal waterfall

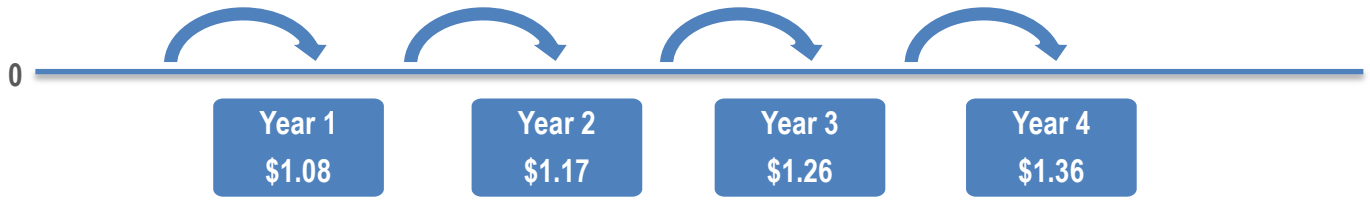
- LP Friendly Distribution Waterfall minimizes clawback risk
  - Because the GP cannot participate in the profit interest until the contributed capital has been returned, it is unlikely for the GP distributions to exceed 20% of the total profit interest

Preferred Return (Hurdle) Test

Preferred Return ("Hurdle Rate") – The minimum return to investors (not guaranteed) before carried interest is permitted, as articulated in the LPA.

Investment example: $1 held for four years

- Sold for $2
- Sold for $1.25



- Preferred Return (Hurdle Rate) can be compounded annually or calculated as a simple return
  - Compounding – interest calculated on the principal and the interest accumulated from prior periods;
  - Simple Interest – interest on the principal for a defined period

Hurdle Test

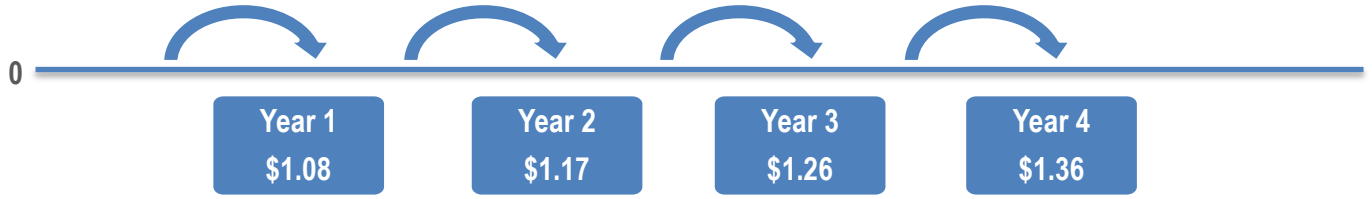
If return of capital + profits > 8% / per annum compounded hurdle, then GP participates in the profit share

- $2 > 1.36 ➞ Gain is $1.00 ➞ gain greater than the $0.36 hurdle - GP participates in the profit share
- $1.25 < 1.36 ➞ Gain is 25¢, 25¢ to LP – gain below the hurdle - No GP participation in the profit share

Catch Up

- The catch-up allows for the GP to receive its 20% share of the preferred return "hurdle", once the LP has achieved the preferred return on its contributions;
- Usually 100% of the remaining cash goes to the GP until it is fully "caught up" with the LPs;
- Profits are split generally 80/20 (LP/GP), post the catch-up

Suppose "B", the next investment returns $3, in year 4



GP Catch-Up/Profit Share

- The GP first needs to 'make up' 11¢ to make investment A whole;
- LP receives next 11¢ of gain for a total 36¢ preferred return (25¢ + 11¢ = 36¢);
- Next, GP receives 9¢ in catch-up of the investment A profit, to achieve 80/20 split (20% of 45¢);
- The GP then participates in the remaining gain on investment B, after B goes through the waterfall as reviewed.

Management Fee Waiver

- Management Fee Waiver (GP Deemed Contribution)
  - Waived management fees equate to GP's capital contribution
  - GP receives profits interest equal to waived amount
- GP Benefits
  - Tax deferral and lower tax rate – pay capital gains rate at time of sale v. ordinary income rate at time fees are received;
  - Profits not subject to employment taxes
- GP Risks
  - Negative cash flow;
  - Surety of investment results;
  - Change in tax policy
- LP Economic Impact
  - No economic impact on the cash flow
    - LP IRR negatively impacted as LP finances the GP commitment

Management Fee Offsets

- Management fee offset
  - Provides for reduction of management fees if the GP or its affiliates receive certain fees from the Fund's portfolio companies
  - Typical fees charged – Transaction, Break-up, Directors, Advisory, Acquisition, Disposition and Affiliate Service
  - Management fee offset range – 0%-100%

- GP Impact
  - Earlier participation by the GP in the profits interest
    - Less fees to return as part of Return of Capital;
    - Increased likelihood of achieving the preferred threshold sooner
  - GP still receives management fee in the form of transaction fees

- LP Impact
  - Reduced fee drag on the IRR and MOIC from capital called for management fees;
  - Reduction in the Gross to Net spread;
  - May not capture all fees charged to portfolio companies;
  - Opportunity cost of capital for portfolio companies if fees are burdensome.

Speaker Biographies

- **Christopher Ailman, Chief Investment Officer, California State Teachers' Retirement System (CalSTRS)-** Mr. Ailman is the chief investment officer of CalSTRS, where he oversees an investment portfolio valued at approximately $181.3 billion as of September 30, 2015. CalSTRS administers a hybrid retirement system, consisting of a traditional defined benefit, cash balance and defined contribution plans, as well as disability and survivor benefits. CalSTRS serves more than 868,000 members and benefit recipients. CalSTRS administers retirement benefits for California's public school educators in grades kindergarten through community college.

  Mr. Ailman joined CalSTRS in the fall of 2000 with more than 27 years of institutional investment management experience. As CIO, Mr. Ailman leads a team of 117 investment staff in the following asset classes: Private Equity, Global Equity, Corporate Governance, Fixed Income, Real Estate, Operations, and Innovation and Risk.

- **David Larsen, Managing Director, Alternative Asset Advisory Services, Duff & Phelps-** Mr. Larsen is a managing director in the San Francisco office of Duff & Phelps and part of the Portfolio Valuation service line. He has more than 30 years of transaction and accounting experience. He specializes in valuation, accounting, and regulatory issues faced by Alternative Asset managers and investors.

  Mr. Larsen serves as Vice Chair of the International Private Equity and Venture Capital Valuations Board (IPEV), which in 2012 released updated International Private Equity Valuation Guidelines and is updating those guidelines in 2015; and serves as a member of the American Institute of Certified Public Accountants (AICPA) PE/VC Practice Guide Task Force. Mr. Larsen has served as a special advisor to the Institutional Limited Partners Association; board member, project manager and technical advisor to the Private Equity Industry Guidelines Group and was instrumental in developing and drafting the Private Equity Industry Guidelines Group's Valuation and Reporting Guidelines; member of the Financial Accounting Standards Board's Valuation Resource Group responsible for providing the Board with input on potential clarifying guidance on issues relating to the application of the principles of FASB ASC Topic 820 (formerly SFAS No. 157), Fair Value Measurements and a member of the AICPA Net Asset Value Task Force.

- **Josh Lerner, Chair, Entrepreneurial Management Unit and Jacob H. Schiff Professor, Harvard Business School-** Dr. Lerner has a B.A. from Yale University and a Ph.D. from Harvard's Economics Department. His research focuses on venture capital and private equity organizations. He is the co-director of the National Bureau of Economic Research's Productivity, Innovation, and Entrepreneurship Program. Dr. Lerner founded the Private Capital Research Institute, a non-profit devoted to encouraging access to data and research about venture capital and private equity. He was named one of the 100 most influential people in private equity over the past decade by Private Equity International magazine and one of the ten most influential academics in the institutional investing world by Asset International's Chief Investment Officer magazine. He is the vice chair of the World Economic Forum's Global Agenda Council on the Future of Investing. Dr. Lerner advises limited partners, general partners, and government bodies interacting with private capital.

- **Robert Maynard, Chief Investment Officer, Public Employee Retirement System of Idaho (PERSI)-** Mr. Maynard is responsible for all investment activities of PERSI, which currently has approximately $15 billion in assets under management. He has served in that position since 1992. Previously he served as Deputy Executive Director of the Alaska Permanent Fund Corporation, and as Assistant Attorney General for the State of Alaska. In addition to his duties for the Idaho Retirement System, Mr. Maynard participates or has participated as an advisor, board member, or chair of a number of investment related and charitable organizations and has lectured frequently on investment topics at numerous conferences and institutions.

- **Paul C. McCoy, Partner, Morgan Lewis-** Mr. McCoy represents and counsels clients in the development of, and investment in, private investment funds in all asset classes. Leader of the private equity funds practice, he handles private fund formation; investments into private funds; the secondary sales of private fund interests, individually, or as a portfolio; as well as formation of complex separate accounts, captive funds, and joint venture arrangements. Mr. McCoy's clients range from some of the world's largest government pensions, private foundations, insurance companies, and funds of funds to early-stage venture funds.