
Oregon Investment Council

February 1, 2018
9:00 AM

**Oregon State Treasury
16290 SW Upper Boones Ferry Road
Tigard, OR 97224**

Rukaiyah Adams
Chair

John Skjervem
Chief Investment Officer

Tobias Read
State Treasurer



OREGON INVESTMENT COUNCIL



Agenda

February 1, 2018
9:00 AM

Oregon State Treasury
Investment Division
16290 SW Upper Boones Ferry Road
Tigard, OR 97224

<u>Time</u>	<u>A. Action Items</u>	<u>Presenter</u>	<u>Tab</u>
9:00-9:05	1. Review & Approval of Minutes December 13, 2017	Rukaiyah Adams <i>OIC Chair</i>	1
9:05-9:10	2. Officer Election	Council Members	2
9:10-9:15	3. Proposed 2019 OIC Meeting Dates	John Skjervem <i>Chief Investment Officer</i>	3
9:15-9:25	4. Committee Reports and CIO Remarks	John Skjervem	4
9:25-10:10	5. Bridgepoint Europe VI <i>OPERF Private Equity Portfolio</i>	Michael Langdon <i>Senior Investment Officer, Private Equity</i> William Jackson <i>Managing Partner, Bridgepoint</i> John Barber <i>Partner, Bridgepoint</i> Tom Martin <i>Managing Director, TorreyCove Capital Partners</i>	5
10:10-10:15	6. Annual Placement Agent Report	John Hershey <i>Director of Alternative Investments</i>	6
10:15-10:30	----- BREAK -----		
10:30-11:30	7. Private Equity Annual Review and 2018 Plan <i>OPERF Private Equity Portfolio</i>	Michael Langdon Tom Martin	7

Rukaiyah Adams
Chair

John Russell
Vice Chair

Rex Kim
Member

Rick Miller, Jr.
Member

Tobias Read
State Treasurer

Steve Rodeman
PERS Director

B. Information Items

11:30-11:35	8. Asset Allocation & NAV Updates a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund d. Southern Oregon University Endowment Fund	John Skjervem	8
	9. Calendar — Future Agenda Items	John Skjervem	9
11:40	10. Open Discussion	OIC Members Staff Consultants	

C. Public Comment Invited

10 Minutes

TAB 1 – REVIEW & APPROVAL OF MINUTES

December 13, 2017 Regular Meeting



STATE OF OREGON
OFFICE OF THE STATE TREASURER
16290 SW UPPER BOONES FERRY ROAD
TIGARD, OREGON 97224

OREGON INVESTMENT COUNCIL
DECEMBER 13, 2017
MEETING MINUTES

Members Present: Rukaiyah Adams, Tobias Read, John Russell, Rex Kim, and Steve Rodeman

Staff Present: John Skjervem, Darren Bond, Perrin Lim, David Randall, John Hershey, Karl Cheng, Tony Breault, May Fanning, Michael Langdon, Jen Plett, Jen Peet, Tom Lofton, James Sinks, Michael Viteri, Austin Carmichael, Dana Millican, Ben Mahon, Angela Schaffers, Roy Jackson, Mike Mueller, Jo Recht, Ricardo Lopez, Steven Chang, Garrett Cudahey, Debra Day, Andy Coutu, Dmitri Palmateer, Kim Olson, William Hiles, Eric Messer, Ryan Mann, Amy Wojcicki, and Caitlyn Wang

Consultants Present: Tom Martin and David Fann, (TorreyCove); Allan Emkin and David Glickman (PCA); Janet Becker-Wold and Jim Callahan (Callan)

Legal Counsel Present: Steven Marlowe, Oregon Department of Justice

The December 13th, 2017 OIC meeting was called to order at 9:00 am by Rukaiyah Adams, OIC Chair.

I. **9: 01am Review and Approval of Minutes**

MOTION: Mr. Russell moved approval of the November 1st, 2017 OIC meeting minutes, and Mr. Kim seconded the motion which then passed by a 4/0 vote.

II. **9:11 am Committee Reports and CIO Update**

Committee Reports: John Skjervem, OST Chief Investment Officer shared with the Council the results of Treasury's annual holiday toy drive which in 2017 raised over \$2,000 for underprivileged children and their families. Mr. Skjervem recognized OST Investment Officer Mike Mueller who has led the toy drive since 1999 and this year turned Treasury's holiday fundraising proceeds into 195 new toys with a combined retail value of over \$5,700.

Mr. Skjervem then gave an update on the following committee actions taken since the November 1, 2017 OIC meeting:

Private Equity Committee

November 2, 2017	Orchid Asia VII	\$150 million
------------------	-----------------	---------------

Alternatives Portfolio Committee

December 4, 2017	Warwick Partners IV	\$200 million (with co-investment potential)
------------------	---------------------	---

December 4, 2017	EnCap Flatrock Midstream IV	\$200 million
------------------	-----------------------------	---------------

December 4, 2017	LS Power Equity Partners IV	\$200 million
------------------	-----------------------------	---------------

Opportunity Portfolio Committee

None

Real Estate Committee

In accordance with Section 6, OST Staff Authority, of *INV 501: Acquiring and Managing Equity Real Estate*, staff has completed redemptions from two existing mandates in order to maintain exposure to REITs within OIC-established ranges:

- Cohen & Steers – approximately \$70 million; and
- LaSalle Investment Management – approximately \$854 million.

In accordance with Section 6, OST Staff Authority, of *INV 501: Acquiring and Managing Equity Real Estate*, staff has terminated, effective Dec 1, 2017, the following real estate separate account mandate:

- Talmage Separate Account – approximately \$430 million.

Mr. Skjervem then described the Council's need to elect officers for the coming two-year period, previewed staff's Alternatives Manager Recommendation, framed the Fixed Income Program Review and commented on the Q3 2017 Performance & Risk Report.

III. 09:12 am Officer Election

Treasurer Read nominated Rukaiyah Adams to continue as the OIC Chair. Mr. Russell seconded the motion which then passed by a 3/0 vote (Ms. Adams abstained from voting).

IV. 10:05 am Aspect Capital Core Diversified Programme – OPERF Alternatives Portfolio

Ben Mahon, Senior Investment Officer, Alternatives, recommended a \$500 million commitment (an initial investment of \$250 million with additional funding at Staff discretion) to the Aspect Capital Core Diversified Programme for the Diversifying Strategies sleeve of the OPERF Alternatives Portfolio, subject to satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel. This proposed commitment represents a new investment manager relationship on behalf of the OPERF Alternatives Portfolio.

Aspect Capital was established in 1997 by several individuals, including Anthony Todd and Martin Lueck who left Adam, Harding, & Lueck, an early pioneer in quantitative investing. As part of that legacy, the firm has focused exclusively on trend-following strategies until a recent acquisition of a currency management team. Aspect remains independently owned with Messrs. Todd and Lueck related family trusts owning over 70% of the Firm's equity, with the balance held by other employees. Aspect has a team of over 130 individuals and total assets under management (AUM) of over \$6 billion, with approximately \$4.7 billion in trend following strategies and \$1.7 billion in currency management.

Mr. Mahon then introduced Mr. Anthony Todd, Chief Executive Officer who provided the Council with a presentation on the firm, its investment strategy and performance record.

MOTION: Mr. Russell moved approval of staff's recommendation, and Mr. Kim seconded the motion which then passed by a 4/0 vote.

- V. **10:41 am Fixed Income Program Review – OPERF OSTF, OITP and other OST-managed accounts**
Garrett Cudahey, Investment Office, Fixed Income, Tom Lofton, Investment Officer, Fixed Income and Angela Schaffers, Investment Analyst, Fixed Income presented the OPERF Fixed Income Program annual review which included:
- Look Back and Ahead;
 - Internal Derivatives Usage Update;
 - Fixed Income Program Overview; and
 - Discussion of Select Accounts.
- VI. **11:23 am Q3 2017 Performance & Risk Report – OPERF**
Karl Cheng, Senior Investment Officer, Portfolio Risk & Research presented and discussed an updated view of the OPERF risk dashboard, while Janet Becker-Wold from Callan Associates provided a corresponding update on OPERF performance for the period ended September 30, 2017.
- VII. **11:24 am Asset Allocation & NAV Updates**
Mr. Skjervem reviewed asset allocations and NAVs across OST-managed accounts for the period ended October 31, 2017.
- VIII. **11:24 am Calendar — Future Agenda Items**
A calendar listing of future OIC meetings and scheduled agenda topics was included in the Council's meeting material.
- IX. **12:28 am Open Discussion**
Vice Chair Russell remarked on the experience he and Mr. Miller enjoyed during their recent fiduciary training in Toronto, Canada. Mr. Russell also stressed the importance of pursuing and maintaining relationships with other public pension funds, particularly in relation to governance issues. Mr. Skjervem shared his own sense of comradery among public pension CIOs and assured Council members that he and other staff members regularly engage and collaborate with public plan peers.
- 12:28 am Public Comments**
N/A

Ms. Adams adjourned the meeting at 11:28 am.

Respectfully submitted,



May Fanning
Executive Support Specialist

TAB 2 – Officer Election



Origination: 04/2007
Last Approved: 10/2016
Last Revised: 10/2016
Next Review: *1 year after approval*
Owner: *John Skjervem: Chief Investment Officer*
Policy Area: *Investments*
References: *OST Policy 4.00.00*

INV 101: Oregon State Treasury Support for the Oregon Investment Council

OREGON INVESTMENT COUNCIL POLICY

INTRODUCTION & OVERVIEW

Summary Policy Statement

The Oregon Investment Council ("OIC" or "Council") formulates broad policies for the investment and reinvestment of moneys in the investment funds and the acquisition, retention, management, and disposition of investments in the investment funds (the "Fund" or "Funds"). The voting members of the Council include the State Treasurer and four appointees of the Governor. The Public Employees Retirement System (PERS) Director is an ex officio, non-voting member of the Council. The OIC is responsible for approving and revising policies. The Chief Investment Officer, working with Investment Division staff, is responsible for approving and revising procedures, developing OIC meeting agendas, and drafting OIC resolutions. OST Investment Division staff provide administrative and research support to the Council, and are responsible for recording, transcribing, and distributing OIC meeting minutes.

Authority

ORS 182.010-020, ORS 293.721-726, ORS 293.731

POLICY PROVISIONS

Policy Statements

1. Develop OIC Meeting Agendas
 - a. The Chief Investment Officer (CIO), in coordination with the OIC Chair and State Treasurer, is responsible for constructing an agenda for each OIC meeting.
 - b. The CIO shall produce the agenda established in (a) and distribute it and any pertinent documents or

supporting materials to Council members at least one week prior to any regularly-scheduled OIC meeting.

- c. Any Council member may at any time request that the OIC Chair place one or more items on a forthcoming OIC meeting agenda. To provide staff with sufficient preparation time to comply with (b) above, such additional agenda item requests should be sent to the OIC Chair no less than two weeks in advance of the next regularly-scheduled OIC meeting.

2. Record, Transcribe and Distribute OIC Meeting Minutes

- a. A member of the Investment Division staff shall record and distribute OIC meeting minutes. Approved minutes, except those taken during executive session, shall be posted to the OST website along with a corresponding audio recording.

3. Draft OIC Resolutions

- a. The CIO or staff may draft policies or resolutions for OIC action upon request. All advisors to the Council, including but not limited to investment advisors, OST staff members and legal counsel, when practicable, shall submit to the Council for its consideration written recommendations, whenever OST staff and legal counsel determine Council action is required.
- b. From these written recommendations, OST staff shall have prepared for the Council's consideration appropriate forms of motion. Whenever practicable, OST staff shall review and advise the Council in writing whether proposed Council action concerning investments falls within or outside of existing investment policies, and, if within, shall identify the applicable policy or policies.

4. Staff and Research Support

- a. Should the OIC wish to investigate or research a matter related to current or potential investment activities, OST Investment Division staff shall provide support and assistance as required.

Exceptions

None.

PROCEDURES and FORMS

A. Rules of Conduct at Oregon Investment Council Meetings

ADMINISTRATION

Feedback

Your comments are extremely important to improving the effectiveness of this policy. If you would like to comment on the provisions of this policy, you may do so by e-mailing the OST Policy Analyst. To ensure your comments are received without delay, *please list the policy number and name in your e-mail's subject*. Your comments will be reviewed during the policy revisions process and may result in changes to the policy.

Attachments:

[Rules of Conduct at Oregon Investment Council](#)

Approval Signatures

Step Description	Approver	Date
	Carmen Leiva	pending
	John Skjervem: Chief Investment Officer	11/2017

COPY

OREGON INVESTMENT COUNCIL POLICY

Meeting Conduct Rules

Applicability of Rules

1. These rules are applicable to convened meetings, regular and special, of the Oregon Investment Council (“OIC” or “Council”).
2. In consultation and coordination with the Chief Investment Officer (the “CIO”) of the Oregon State Treasury (OST), the OIC Chair will schedule approximately eight Council meetings during each calendar year. The OIC Chair may call additional, special or informal meetings as deemed necessary or advisable, and may hold these or regularly-scheduled meetings by telephone. OIC meetings held in Executive Session shall be conducted in accordance with ORS 192.660.
3. **Chair**: In accordance with INV 101, the Chair is responsible for consulting and coordinating with the CIO to develop and set all OIC meeting agendas. Additionally, the Chair shall preside over all OIC meetings, regular and special. The primary roles of the Chair are to a) ensure OIC meetings are as efficient and productive as possible and b) facilitate communication among OIC members, OST staff and other constituents and stakeholders.
4. **Meeting Notice and Agenda**: The CIO shall provide notice of meetings in compliance with ORS 192.610-690, and such notice shall contain a copy of the meeting agenda setting forth, with reasonable clarity, the matters scheduled for OIC members’ review and discussion.
5. **Quorum**: Three of the Council’s five voting members shall constitute a quorum.
6. **Majority Vote**: An affirmative vote of three of the Council’s five voting members is required for Council approval of recommendations and resolutions.
7. **Conflict of Interest**: As defined in ORS 244.120, rules promulgated by the Oregon Government Ethics Commission and other related Council policies, Council members shall announce any and all potential or actual conflicts of interest prior to taking action on an issue, recommendation or resolution that is presented to the Council for its consideration or approval. Announced conflicts should be recorded as provided in Oregon Revised Statutes 244.130 (see also: INV 104 OIC Standards of Ethics). For purposes of this policy, “take action” means to vote, debate, recommend or discuss.
8. **Voting**: Except in the case of an actual conflict of interest, OIC members, when present, shall vote either aye or nay on any issue, recommendation or resolution presented to the Council for its consideration or approval. If such an actual conflict of interest exists, the affected member shall make a declaration of the conflict and excuse him or herself from the corresponding Council vote or discussion.
9. **Record of Votes**: The OIC’s legal representative shall tally member votes through an oral roll call process.
10. **Recess or Adjournment**: Given a quorum, either the Chair or a majority vote among the Council’s voting members may recess or adjourn any Council meeting.

11. **Council Elections:** The Council shall elect a Chair and Vice Chair at the last regularly-scheduled Council meeting in each odd-numbered calendar year. The Chair and Vice Chair shall both serve two-year terms and may be reelected to consecutive terms provided that, per ORS 293.711, no member may serve as Chair for more than four years in any consecutive 12-year period.

Between biennial elections, and with at least one week's notice, a majority of the Council's voting members may request a special election, held at the next regularly-scheduled Council meeting, to select officers for vacancies in an otherwise unexpired term.

In the event that a Chair or Vice Chair resigns, is removed, or whose service on the Council ends, the Council, at its next regularly-scheduled meeting, shall elect a successor.

TAB 3 – Proposed 2019 OIC Meeting Dates

OREGON INVESTMENT COUNCIL

Proposed 2019 Meeting Schedule

Meetings Begin at 9:00 am

**Oregon State Treasury
Investment Division
16290 SW Upper Boones Ferry Road
Tigard, OR 97224**

Thursday, January 31, 2019

Wednesday, March 13, 2019

Wednesday, April 24, 2019

Wednesday, June 5, 2019

Wednesday, August 7, 2019

Wednesday, September 18, 2019

Wednesday, October 30, 2019

Wednesday, December 11, 2019

TAB 4 – Committee Reports and CIO Remarks

Opening Remarks

John D. Skjervem, Chief Investment Officer

February 1, 2018



Oregon State Treasury

February 1, 2018 OIC Meeting

Officer Election

- Oooops

Investment Performance

- Preliminary net, total return for OPERF in 2017 = 15.3%

Private Equity Manager Recommendation

- Good Portfolio Fit

Private Equity Program Review

- Herculean year for “staff” in 2017
- Delivered on Primary 2017 Plan Objective
- Adding Increased Discretionary Co-Investment as 2018 Goal

2018 Investment Divisions Goals

- No BHAGS
- Expand Physical Footprint (Again)
- Hire More Great Staff!

TAB 5 – Bridgepoint Europe VI
OPERF Private Equity Portfolio

Bridgepoint Europe VI, L.P.

Purpose

Subject to the satisfactory negotiation of all terms and conditions with Staff working in concert with legal counsel, Staff recommends approval of an up to €300 million capital commitment to Bridgepoint Europe VI, L.P. (“BE VI”, “Fund VI” or the “Fund”) as part of the OPERF private equity portfolio. Approval of the proposed commitment would establish a new private equity relationship with Bridgepoint Advisors Limited (“Bridgepoint”, the “Firm”, or the “GP”).

Background

Bridgepoint was founded in 1984 as a subsidiary of National Westminster Bank, a large bank in the United Kingdom and a subsidiary of Royal Bank of Scotland Group. In 2000, the Firm’s Partners acquired the management company from NatWest, and Bridgepoint has since been 100% owned by its Partners and employees. Bridgepoint currently employs more than 100 investment professionals operating out of 11 offices around the world. This team is led by a cohesive group of 27 Partners with an average tenure of 17 years at the Firm. In 2001, the GP raised its first private equity partnership as an independent entity (Bridgepoint Europe II), and Bridgepoint has since raised roughly €13 billion across four funds focused on the Firm’s core middle market, pan-European investment practice. Bridgepoint is now targeting at least €5 billion for Bridgepoint Europe VI as a continuation of that investment practice. In addition to the flagship Bridgepoint Europe investment practice, the GP also operates two additional fund series focused on small cap buyout (Bridgepoint Development Capital) and growth equity (Bridgepoint Growth) investments.

Strategy

In keeping with the Firm’s legacy Bridgepoint Europe strategy, BE VI will focus on companies with enterprise values between €200 million and €600 million in the business services, consumer, financial services, healthcare, manufacturing & industrials, and technology & media sectors. The Firm follows a thematic investment strategy leveraging local presence and sector expertise to target growing businesses that present buy and build or operational improvement potential. Bridgepoint invests primarily in companies with headquarters or significant operations in Western Europe, but the GP does not pursue overly prescriptive country allocations. Fund VI will be flexible in its deployment of capital within Europe to exploit regional volatility and capture ‘best value’ and relative return opportunities. However, in virtually all cases, Bridgepoint targets industry leading, export businesses in the region with additional international expansion potential.

Issues to Consider

Attributes:

- *Solid Recent Performance* – Since the onset of the global financial crisis, Bridgepoint has invested heavily in enhancements to the investment platform which have resulted in strong early results in Bridgepoint Europe IV and V. Importantly, the GP has focused increasingly on creating value through hands-on operational intervention, and Bridgepoint Europe portfolio companies have realized average annual EBITDA growth rates more than 1,000bps above EU GDP since 2010.
- *Deep Local & Domain Expertise* – Bridgepoint employs a dedicated team of 75 investment professionals focused on the flagship middle market, pan-European investment practice. The team is led by 20 investment Partners with an average tenure of 17 years at Bridgepoint and average private equity experience of 21 years. The Bridgepoint Europe team is organized across six sector coverage groups as well as teams dedicated to portfolio company operations and procurement and capital markets. The Bridgepoint Europe platform includes investment offices in London, Paris, Madrid, Frankfurt, Amsterdam, Stockholm, Warsaw, and Istanbul, and portfolio company support offices in New York and Shanghai. This team is very cosmopolitan with 15 separate nationalities

represented, and two thirds of the Bridgepoint Europe investment team speaks two or more languages.

- *Strong Portfolio Fit* – The OPERF private equity program is currently underweight European exposure, and the European middle market is an increasingly challenging segment for OPERF due to high demand for allocations with established GPs. BE VI represents a unique opportunity to make a substantive, first time commitment with an established franchise in pursuit of high quality, pan-European middle market exposure. Further, Bridgepoint has proposed a structure whereby Staff can leverage the size of this commitment to efficiently reduce fee drag and potentially create a more strategic relationship with the Firm. Additional information on the proposed structure for OPERF can be found in the TorreyCove materials.

Concerns:

- *Bridgepoint Europe III Performance* – Bridgepoint Europe III performance was weak on both an absolute and relative basis. [Mitigant: BE III commenced activity in late 2005, and the final investment was made in the spring of 2008. As a result, this was a portfolio with heavy vintage concentration in the period immediately before the global financial crisis. The GP learned very important lessons in Fund III which inform Bridgepoint’s focus on portfolio construction and fund management. In the years since Fund III’s investment period, Bridgepoint has also invested heavily in the team’s sector and functional capabilities to further formalize and enhance the investment process. Finally, Fund III also suffered heavy losses in Italy which is a market that Bridgepoint no longer targets. As noted already, Bridgepoint’s investment results in the decade since Fund III have rebounded nicely.]
- *Large, New Relationship* – At €300 million, the recommended commitment for BE VI is reasonably large for a newly established middle market relationship. [Mitigant: This recommendation is broadly in line with OPERF’s average commitment size of \$250-300 million over the past several vintage years. During this period, most commitments have come in around this average as manager exposure continues to be focused and flattened, and the OIC has established a number of new GP relationships at this level. In the case of BE VI, the structure and portfolio fit further support the proposed size.]

Terms

Legal negotiations are not final, but Staff views the proposed terms as attractive. Further information on the proposed terms for OPERF can be found in the TorreyCove materials. Please note that Staff has not interacted with a placement agent in connection with the fundraising process.

Conclusion

Staff recommends a capital commitment of up to €300 million to Bridgepoint Europe VI, L.P., which represents, in Staff’s opinion, an attractive opportunity for the European segment of the OPERF private equity portfolio. Please note that the proposed structure of this commitment has OPERF investing in two separate vehicles, but this recommendation covers an aggregate commitment amount across both vehicles.



MEMORANDUM

TO: Oregon Public Employees Retirement Fund (“OPERF”)
FROM: TorreyCove Capital Partners (“TorreyCove”)
DATE: January 24, 2018
RE: Bridgepoint Europe VI, L.P. (the “Fund” or “Fund VI”)

Strategy:

Fund VI will continue to pursue the same strategy as its predecessor funds, making control investments in middle-market companies across Europe. The Firm defines the middle-market as companies with enterprise value between €200.0 million and €1.0 billion; however, Bridgepoint has identified the €200.0 million to €600.0 million range as its sweet spot. A typical investment will require equity capital of €125.0 million to €500.0 million with a sweet spot of €125.0 million to €250.0 million. As with prior Bridgepoint funds, Bridgepoint will invest on a pan-European basis and there will be no prescriptive country allocations. Similarly, the Fund will invest across a variety of sectors with no specific target allocations to any one sector. The ultimate goal of Fund VI is to create a well-diversified portfolio of roughly 15 to 22 high growth investments across Europe. Targeted companies will primarily operate in the Firm’s six core sectors: (i) consumer; (ii) business services; (iii) manufacturing & industrials; (iv) healthcare; (v) financial services; and (vi) technology & media.

Please see attached investment memorandum for further detail on the investment opportunity.

Allocation:

A new commitment to the Fund would be allocated 100% to the Corporate Finance investment sub-sector and will further be categorized as an International investment. As of the September 30, 2017 report, OPERF’s allocation to Corporate Finance is listed in the table below. It is important to note that since allocation is based on fair market value, a commitment to the Fund would not have an immediate impact on OPERF’s current portfolio allocation. Commitments to the Fund are complementary to OPERF’s existing fund commitments and provide the overall portfolio with a further degree of diversification.

As of September 30, 2017	Target	FMV	FMV + Unfunded
Corporate Finance	60-85%	75.9%	77.1%

Conclusion:

The Fund offers OPERF an opportunity to participate in a differentiated portfolio of private equity investments with relatively attractive overall terms. TorreyCove’s review of the General Partner and the proposed Fund indicates that the potential returns available justify the risks associated with an investment in the Fund.



TorreyCove recommends that OPERF consider a commitment of €225 million¹ to the Fund and €56.25 million² to the Sidecar Fund. TorreyCove's recommendation is contingent upon the following:

- (1) Satisfactory negotiation or clarification of certain terms of the investment;
- (2) Satisfactory completion of legal documents;
- (3) Satisfactory continuation and finalization of due diligence;
- (4) No material changes to the investment opportunity as presented; and
- (5) Confidentiality maintained regarding the commitment of OPERF to the Partnership until such time as all the preceding conditions are met.

¹ Equates to approximately \$278.8 million based on the 1/23/18 exchange rate of 1.2391 EUR / USD.

² Equates to approximately \$69.7 million based on the 1/23/18 exchange rate of 1.2391 EUR / USD.

TAB 6 – Annual Placement Agent Report

Annual Placement Agent Disclosure

February 1, 2018

Purpose

In accordance with its Policy ADM 201: Conflict of Interest and Code of Conduct, OST shall disclose, in all investment recommendations to the Oregon Investment Council, any Placement Agent used by the investment firm *that has had any contact with Treasury investment staff*. Staff shall present to the OIC an annual summary of the foregoing, which will also be made available to the public on the Treasury website.

Placement Agent Contact Summary for Calendar Year 2017

<u>Partnership</u>	<u>OPERF Commitment</u>	<u>Placement Agent</u>
Aspect Capital Core Diversified Programme	\$500 million	Agecroft
Genstar Capital Partners VIII	\$150 million	Evercore
GI Partners V	\$250 million	UBS
Novalpina I	€200 million	Park Hill

Note that Placement Agents are retained by investment funds' General Partner, and OST investment staff do not rely on such placement agent firms for access or analysis.

TAB 7 – Private Equity Annual Review and 2018 Plan

OPERF Private Equity Portfolio

OPERF Private Equity Annual Review & 2018 Plan

February 1, 2018



Oregon State Treasury

OPERF PE Annual Review & 2018 Plan - Agenda

- Executive Summary – Page 3
- Investment Environment – Page 4
- OPERF 2017 Private Equity Year In Review – Pages 5 - 7
 - Initiatives – Page 5
 - New Investment Activity – Page 6
 - Cash Flow Activity – Page 7
- OPERF Private Equity Performance Review – Pages 8 - 19
 - Vintage Year Performance – Page 8
 - Fund Selection – Page 9
 - Relative Performance – Pages 10 - 11
 - Private Equity Return Attribution & Outlook – Pages 12 - 19
- OPERF Private Equity Program Portfolio Update – Pages 20 - 30
 - Allocation Relative to Target – Page 20
 - Portfolio Construction – Pages 21 -
 - Geographic Diversification – Pages 21 - 23
 - Sector Diversification – Pages 24 - 25
 - Time Diversification – Page 26 - 29
 - Manager Diversification – Page 30
- 2018 Private Equity Plan – Pages 31 – 33
 - Implementation – Page 31
 - Investment Pacing – Page 32
 - Initiatives – Page 33

Executive Summary

➤ Investment Environment

- The market is hot, relative returns have been weak, and complexity is increasing

➤ OPERF 2017 Private Equity Year In Review

- 14 new commitments totaling \$3.265 billion
- Roughly 25% of OPERF's 2017 commitments benefit from a material economic discount
- Net distributions totaled \$1.1 billion, and OPERF's private equity allocation stands at 20%

➤ OPERF Private Equity Performance Review

- OPERF's PE returns have trailed the benchmark (Russell 3000 + 300bps) over the past decade
- OPERF's experience over the past decade is broadly consistent with that of the PE asset class overall
- Given the experience of the past decade, two existential questions need to be considered:
 - Can the private equity asset class deliver sufficient excess return relative to public equities on a going forward basis?
 - What implementation plan is needed for OPERF to optimally capture excess return relative to public equities in a more challenging and complex environment?
- Sources of excess return are likely to look different going forward

➤ OPERF Private Equity Program Portfolio Update

- OPERF's PE exposure is broadly diversified with respect to geography and sector
- The program continues to struggle with a large exposure to pre-GFC vintages
- OIC/OST need to continue to evolve OPERF's implementation strategy in the asset class

➤ 2018 Private Equity Plan

- \$2.5-3.5 billion of new fund commitments
- Exploit opportunities to reduce fee drag
- Add private equity team capacity
- Continue to pursue enhancements to due diligence and monitoring processes

Investment Environment

➤ M&A Activity

- Developed market volumes through 9/30/17 are 20% below where they stood in 2016, but activity remains reasonably strong and volumes have been robust since 2014. PE continues to account for a relatively stable share of volumes at 23%
- M&A transaction multiples averaged 10.3x EV/EBITDA through the first three quarters of 2017 eclipsing the 10.0x mark set in 2016

➤ Corporate Leverage Finance Activity

- 2017 was a record year for new issue volumes in the U.S. and Europe with roughly \$1.2 trillion of total leveraged loan and high yield issuance

➤ Private Equity Returns

- At the asset class level, private equity has produced results broadly consistent with domestic public market indices over the past decade, and the asset class has significantly underperformed over the past five years
- The asset class has not generated anything close to the 250-500bps of target excess return over public equities for an extended period of time. That level of excess return would have required nearly perfect fund selection or material fee reduction in all vintage years since 2005

➤ Private Equity Activity Update

- At 9/30/17, fundraising was 12% ahead of 2016 in the U.S. and 10% ahead in Europe. There continues to be significant excess demand allowing GPs to raise capital quickly hitting increasing fundraising targets more easily while also negotiating more aggressively
- At 9/30/17, new investment activity was down 11% in the U.S. but up 12% in Europe
- In this high priced environment, GPs are targeting the “Goldilocks Zone” claiming to acquire high quality assets in sectors that exhibit lower cyclicalities on ambitious forward growth projections. GPs have also increasingly turned to add-on acquisitions as a key value creation lever
- In the U.S., year to date exit activity in 2017 is 33% behind activity at this point in 2016, 46% behind the 2015 pace and 30% behind the 2014 pace. Strategics have been less acquisitive this year, and current PE inventory (portfolio companies) is getting older
- Exit activity in Europe continues to be strong

➤ General Industry Update

- Key industry trends that gained momentum in 2017 include the sale of GP stakes and expanded usage of subscriptions line. Each of those trends represent an increase in complexity/opacity for LPs
- The impact of U.S. tax reform will take some time to fully ascertain, but we should anticipate a mixed effect. Leverage levels and forward growth potential will determine winners and losers among existing portfolio companies. On new investments, the buyout model clearly needs to adjust, but this should accelerate an established trend away from financial engineering to operational intervention

A DETAILED UPDATE ON THE INVESTMENT ENVIRONMENT IS AVAILABLE IN APPENDIX A

The market is hot, relative returns have been weak, and complexity is increasing

OPERF Private Equity 2017 Year In Review - Initiatives

2017 OST Private Equity Staff Priorities

1. \$2.5-3.5 billion of new fund commitments
 - The OIC approved \$3.3 billion across 14 commitments
2. Exploit opportunities to reduce fee drag
 - Roughly a quarter of OPERF's commitments (by \$) in 2017 are positioned to benefit from a 25% discount to headline carried interest
3. Continue to pursue enhancements to due diligence and monitoring processes
 - Incremental progress was not achieved in 2017 as staff struggled with team capacity
4. Continue to explore options to reduce the administrative burden of monitoring the Program's long-dated fund portfolio
 - Staff continues to collaborate more closely with TorreyCove to find opportunities to alleviate this burden
5. Private Equity Team Capacity
 - Team capacity stood at 1/3 of target for most of 2017 as recruiting efforts were delayed

OPERF Private Equity 2017 New Investment Activity

➤ During the year the OIC approved 14 separate recommendations which resulted in \$3.265 billion of new capital commitments

- **PACING** – the \$3.3 billion vintage year commitment was in the top half of the target range for the year (\$2.5-3.5 billion). This compares to \$3 billion of approved commitments in 2016 and \$2.3 billion in 2015
- **STRATEGY** – 90% buyout and 10% growth equity with a concentration in the middle market
- **GEOGRAPHY** – 68% domestic and 32% international (projection based on individual fund targets)
- **COMMITMENT SIZE** – all commitments fall in the target range (\$100-500 million)

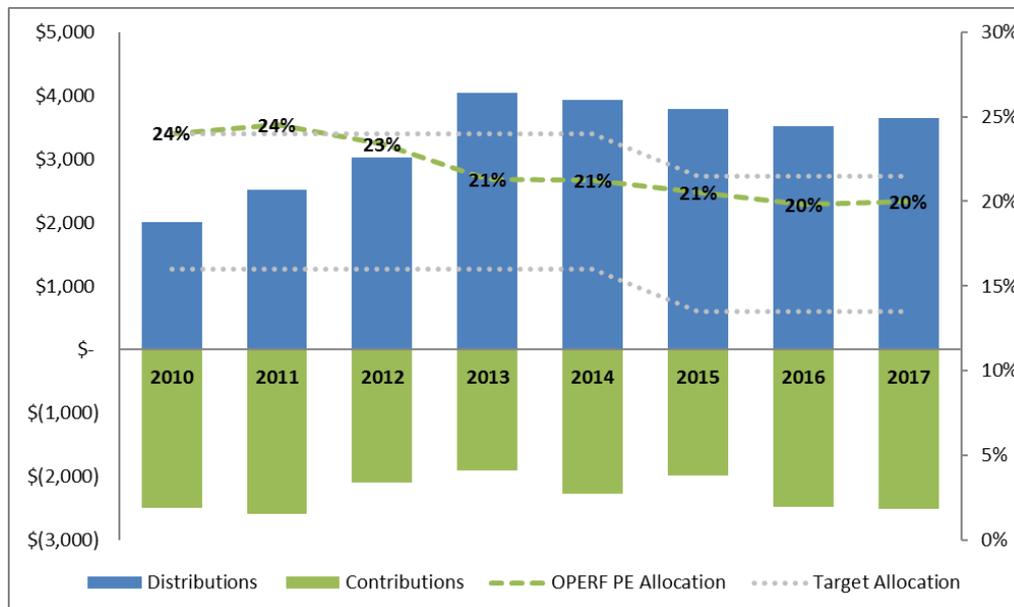
	FUND NAME	STRATEGY	SEGMENT	GEOGRAPHY	COMMIT (MM)
1	Apollo Investment Fund IX	Buyout	Large Market	Global - NA	\$ 480
2	CVC Capital Partners VII	Buyout	Large Market	Global - Europe	€ 225 *
3	EnCap Energy Capital Fund XI	Buyout	Energy	North America	\$ 250
4	Francisco Partners V	Buyout	Middle Market - Tech	North America	\$ 200
5	Genstar Capital Partners VIII	Buyout	Middle Market	North America	\$ 150
6	GI Partners Fund V	Buyout	Middle Market	North America	\$ 250
7	GTCR Fund XII	Buyout	Middle Market	North America	\$ 150
8	KKR Asian Fund III	Buyout	Large Market	Asia	\$ 250
9	Novalpina Capital Partners	Buyout	Middle Market	Europe	€ 200 *
10	Palladium Equity Partners V	Buyout	Middle Market	North America	\$ 250
11	Roark Capital Partners V	Buyout	Middle Market - Consumer	North America	\$ 250
12	Tailwind Capital Partners III	Buyout	Middle Market	North America	\$ 200
	BUYOUT SUB-TOTAL				\$ 2,930
13	Orchid Asia VII	Growth	Middle Market	Asia - China	\$ 135
14	TPG Growth IV	Growth	Middle Market	Global	\$ 200
	GROWTH EQUITY SUB-TOTAL				\$ 335
	TOTAL				\$ 3,265

* - Euro/USD - 0.85

OPERF Private Equity 2017 Cash Flow Activity

➤ In 2017, the OPERF private equity program processed capital contributions of \$2.5 billion and distributions of \$3.6 billion for a net cash flow of \$1.1 billion

- The chart below depicts OPERF's annual PE cash flows since 2010
 - Total net distributions stand at \$8.2 billion over this timeframe
 - 2017 calls and distributions were effectively in line with 2016
 - Capital call activity in 2017 does not capture the increasing usage of subscription lines which has the effect of understating deployment activity and private equity exposure at the full fund level
- At 20%, OPERF's private equity allocation remains at the high end of the target range (17.5% +/- 4%)
 - Despite strong distributions, OPERF's PE allocation remains stubbornly high as pre-crisis commitments continue to liquidate at a slower pace than expected
 - As noted above, OPERF's actual PE exposure is greater than 20% if we account for new transactions funded on credit facilities



OPERF Private Equity Performance Review

Vintage Year	Capital Commitments	Current Fair Market Value	ITD Net TVPI	ITD Net IRR
1981	\$ 194,090,840	\$ -	3.44x	22.5%
1982	\$ -	\$ -	-	-
1983	\$ 25,000,000	\$ -	3.30x	39.7%
1984	\$ 99,500,000	\$ -	4.31x	28.7%
1985	\$ 65,000,000	\$ -	3.40x	16.8%
1986	\$ 98,330,000	\$ -	7.07x	26.4%
1987	\$ 726,670,000	\$ -	2.07x	8.8%
1988	\$ -	\$ -	-	-
1989	\$ -	\$ -	-	-
1990	\$ 62,750,000	\$ -	1.90x	12.4%
1991	\$ 130,000,000	\$ -	2.85x	29.0%
1992	\$ 50,000,000	\$ -	1.82x	27.1%
1993	\$ 525,000,000	\$ -	2.14x	21.0%
1994	\$ 180,214,143	\$ -	1.38x	6.1%
1995	\$ 213,000,000	\$ -	1.51x	11.3%
1996	\$ 400,000,000	\$ -	1.74x	16.3%
1997	\$ 1,789,000,000	\$ 2,143,861	1.65x	10.5%
1998	\$ 955,000,000	\$ 5,360,604	1.39x	7.5%
1999	\$ 1,524,320,840	\$ 8,304,025	1.87x	14.2%
2000	\$ 450,000,000	\$ 29,970,345	1.74x	11.2%
2001	\$ 1,040,000,000	\$ 130,339,918	1.87x	19.7%
2002	\$ 1,350,000,000	\$ 102,970,885	2.00x	17.9%
2003	\$ 475,000,000	\$ 37,787,416	2.09x	14.7%
2004	\$ 949,830,016	\$ 85,492,728	1.99x	17.2%
2005	\$ 2,270,547,999	\$ 464,160,996	1.52x	7.1%
2006	\$ 4,257,500,001	\$ 1,247,386,324	1.48x	6.9%
2007	\$ 3,289,398,846	\$ 1,211,614,500	1.56x	9.3%
2008	\$ 4,544,226,360	\$ 2,357,932,211	1.59x	12.1%
2009	\$ 387,000,640	\$ 135,511,113	1.29x	6.8%
2010	\$ 1,020,000,000	\$ 936,823,758	1.57x	11.6%
2011	\$ 2,228,500,000	\$ 1,864,105,549	1.52x	13.4%
2012	\$ 2,101,202,457	\$ 2,098,650,313	1.57x	18.5%
2013	\$ 1,615,045,380	\$ 1,550,799,537	1.38x	16.3%
2014	\$ 984,000,000	\$ 607,293,310	1.27x	13.6%
2015	\$ 2,892,790,000	\$ 1,483,448,915	1.18x	15.7%
2016	\$ 2,643,992,500	\$ 801,485,086	NM	NM
2017	\$ 4,478,234,640	\$ 82,106,117	NM	NM
Total	\$ 44,015,144,662	\$ 15,243,687,511	1.64x	15.4%

CA Quartile TVPI	CA Quartile IRR
1st	1st
-	-
1st	1st
1st	1st
1st	2nd
1st	1st
3rd	3rd
-	-
-	-
3rd	3rd
1st	1st
2nd	1st
2nd	2nd
3rd	4th
3rd	3rd
2nd	2nd
2nd	3rd
3rd	3rd
1st	1st
2nd	2nd
2nd	2nd
1st	2nd
1st	1st
2nd	2nd
2nd	2nd
2nd	2nd
4th	4th
2nd	2nd
2nd	2nd
2nd	2nd
1st	1st
2nd	2nd
2nd	2nd
2nd	2nd
NM	NM
NM	NM

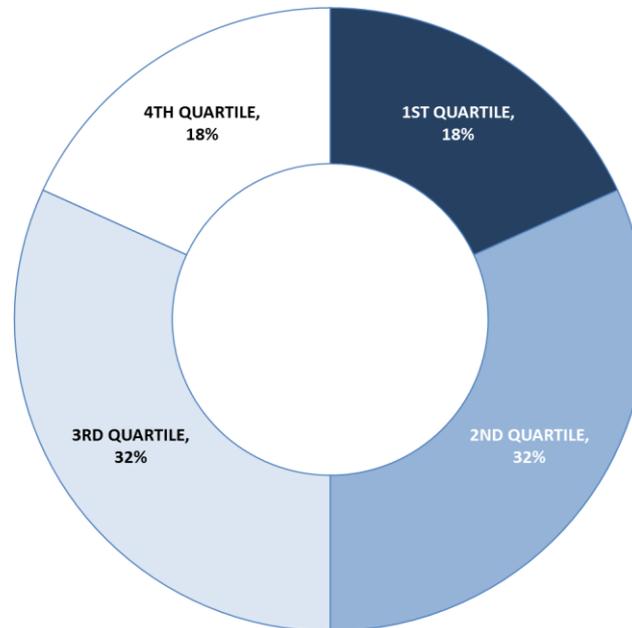
- Since 1981, OPERF has committed \$44 billion to the private equity asset class generating a net IRR of 15.4% and a net multiple of total value to paid in capital (TVPI) of 1.6 times
 - Since inception the program has processed contributions totaling \$33.7 billion and distributions totaling \$40.0 billion for a net gain of \$21.5 billion

- As the chart to the left reflects, the vast majority of OPERF's mature vintage years have generated results that are above median as compared to the Cambridge Associates All Funds benchmark
 - Only one the of the past 15 mature vintage years (2009) has failed to generate median or better performance, and capital commitments in that vintage were limited

- OPERF's commitment pacing has exhibited high volatility among vintage years
 - As we will see in subsequent pages, the over-commitment to the pre-GFC vintages has adversely impacted program returns relative to public equities
 - Importantly, in this chart, vintage year is determined by the initial capital drawdown in each partnership (versus OIC approval or legal closing date). The increasing usage of capital call subscription lines will eventually render that definition meaningless which is reflected in the size of the 2017 vintage

OPERF Private Equity Performance Review

- The chart below presents the quartile rankings for all partnership investments through the 2015 vintage year using Cambridge Associates IRR quartiles
- The analysis below compares each partnership to the appropriate peer set based on strategy and geographic focus to the extent possible
 - The analysis further weights each partnership by capital commitment measuring the dollars committed to each quartile versus the partnership count in each quartile
 - As the chart reflects, OPERF's since inception fund selection is concentrated heavily in the second and third quartiles



OPERF Private Equity Performance Review

- As compared to public equities, the past decade has been as challenging for the program as it has been for the private equity industry in general
 - The top half of the chart below compares OPERF's PE performance to that of the benchmark (Russell 3000 + 300bps)
 - As the chart reflects, the program has failed to produce excess return over public equities over the past decade
 - ***We should be prepared to see this picture worsen going forward as strong relative performance years roll out of the ten-year computation each of the next three years***
 - The bottom half of the chart below compares OPERF's PE performance to that of the broader private equity industry as measured by the pooled return of the Cambridge Associates All Funds benchmark
 - As the chart reflects, OPERF's PE returns are broadly consistent with the market as the program's implementation has also failed to generate excess return over the past decade

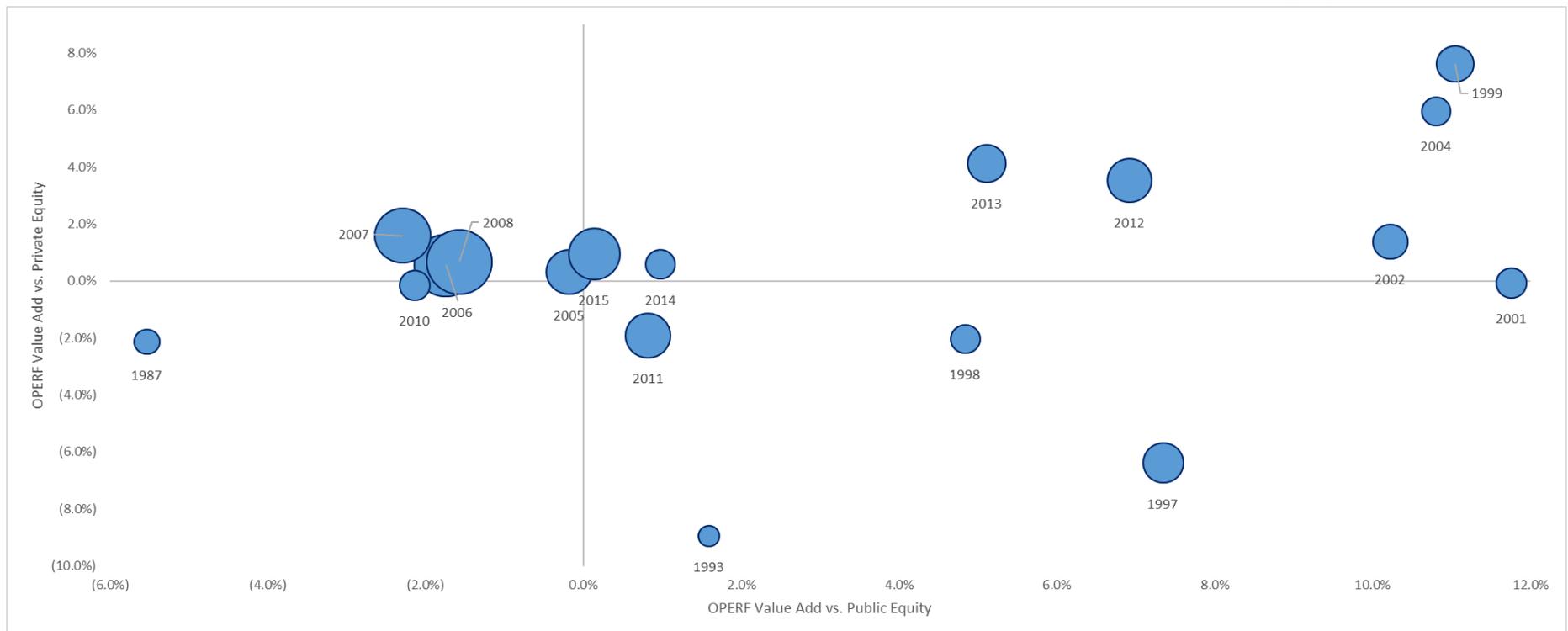
Q3-2017	1 Yr.	3 Yr.	5 Yr.	10 Yr.	20 Yr.	Since Inception
OPERF Program IRR	15.0%	9.6%	12.6%	8.6%	11.2%	15.4%
Russell 3000 + 300bps	22.1%	13.5%	18.1%	11.7%	10.7%	15.4%
<i>Difference</i>	<i>-7.1%</i>	<i>-3.9%</i>	<i>-5.5%</i>	<i>-3.1%</i>	<i>0.5%</i>	<i>0.0%</i>

Q2-2017	1 Yr.	3 Yr.	5 Yr.	10 Yr.	20 Yr.	Since Inception
OPERF Program IRR	15.4%	8.2%	12.8%	8.5%	11.1%	15.4%
CA Pooled Average	15.3%	8.8%	12.7%	8.7%	12.6%	13.1%
<i>Difference</i>	<i>0.1%</i>	<i>-0.6%</i>	<i>0.1%</i>	<i>-0.2%</i>	<i>-1.5%</i>	<i>2.3%</i>

OPERF Private Equity Performance Review

➤ The chart below attempts to depict OPERF's vintage year pacing and execution with respect to both benchmarks (i.e., vs. both the asset class & public equities)

- All mature vintage years where OPERF committed at least \$500 million are included
- The Y-Axis reflects the program's outperformance/underperformance relative to the PE asset class as measured by the Cambridge Associates All Funds pooled return
- The X-Axis reflects the program's outperformance/underperformance relative to a Russell 3000 mPME using the ILPA All Funds Index CFs (which is based on the Cambridge database)
- This size of each bubble reflects OPERF's relative scale of commitments to that vintage year



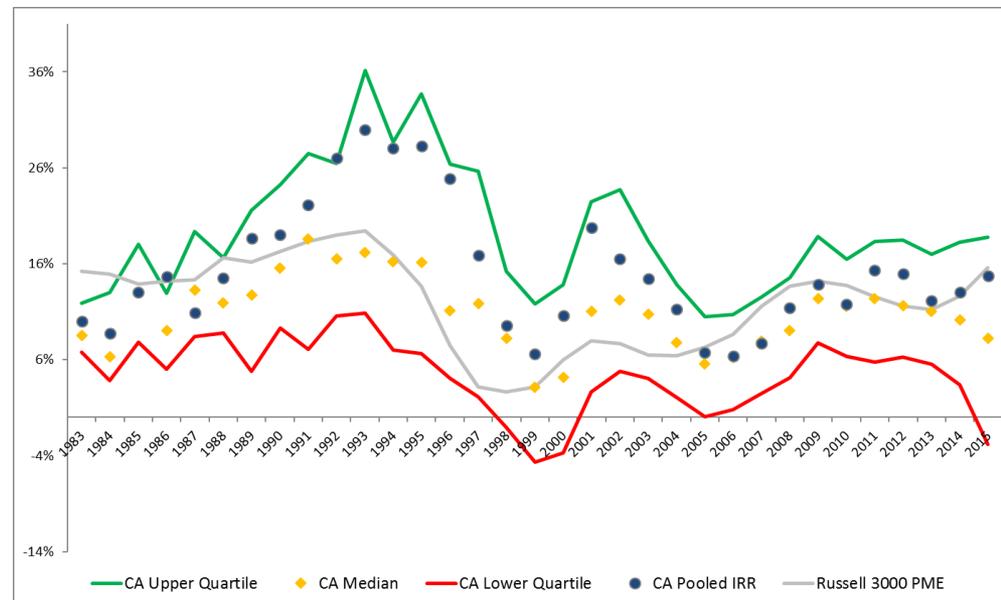
OPERF Private Equity Performance Review

- Given PE's performance relative to the benchmark over the past decade, it makes sense to step back and ask two existential questions
 - **QUESTION #1** – Can the private equity asset class deliver sufficient excess return relative to public equities on a going forward basis?
 - OPERF's benchmark for private equity reflects that the asset class is expected to generate an excess return over public equities of at least 300bps
 - This is broadly consistent with the capital market assumptions that underpin the fund's overall asset allocation
 - The 300bps target is also broadly in line with what most LPs have historically targeted (public index plus 200-500bps)
 - The target return premium compensates for a range of asset class specific risk factors:
 - **Concrete Risk Factors** – investing in smaller companies, with higher leverage, and heightened execution risk (more aggressive operating intervention). This set of risk factors should be viewed in a relatively consistent manner across LPs
 - **Abstract Risk Factors** – headline risk, operational complexity, etc. This category of risk is challenging to measure quantitatively, but is increasing over time. Views on the weight and make-up of this risk factor will vary across LPs
 - **Illiquidity** – this captures both solvency risk which is a reflection of cash needs and opportunity cost which is a function of the size of the PE allocation (both relative and absolute) and transactional capabilities. As such, the weight of the illiquidity factor will vary across LPs
 - What does history tell us about the asset class' ability to generate excess return relative to public equities?
 - What needs to happen to generate excess return over public equities going forward?
 - **QUESTION #2** – Assuming that the answer to question #1 is yes, what implementation plan is needed for OPERF to optimally capture excess return relative to public equities in a more challenging and complex environment?

OPERF Private Equity Performance Review

➤ QUESTION #1 – What does history tell us about the private equity asset class' ability to generate excess return relative to public equities?

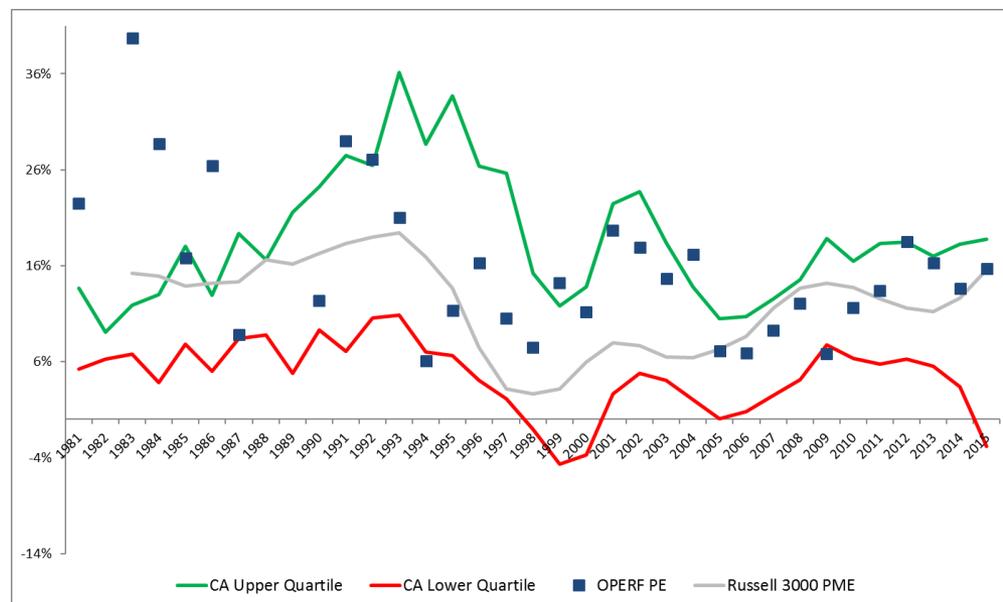
- The chart below presents historical results using the Cambridge Associates All Funds data base and a Russell 3000 mPME using the ILPA All Funds Index CFs for every mature vintage year since 1983
 - Using the CA Pooled IRR as a proxy for the asset class, the chart reflects three distinct eras:
 - 1980s – the first decade is mostly inconclusive based on a very narrow data set which reflects the modest and informal beginnings of the asset class
 - 1990-2004 – the next 15 years reflect very strong results with the CA Pooled IRR plotting well above the public proxy. For much of this period, even median results strongly outperform
 - Since 2005 – as massive new AUM flowed into the asset class and with the backdrop of both the GFC and subsequent QE, returns relative to public equities become very challenging. In most vintages, top quartile outcomes were required to capture a meaningful return premium



OPERF Private Equity Performance Review

➤ QUESTION #1 – What does history tell us about the private equity asset class' ability to generate excess return relative to public equities?

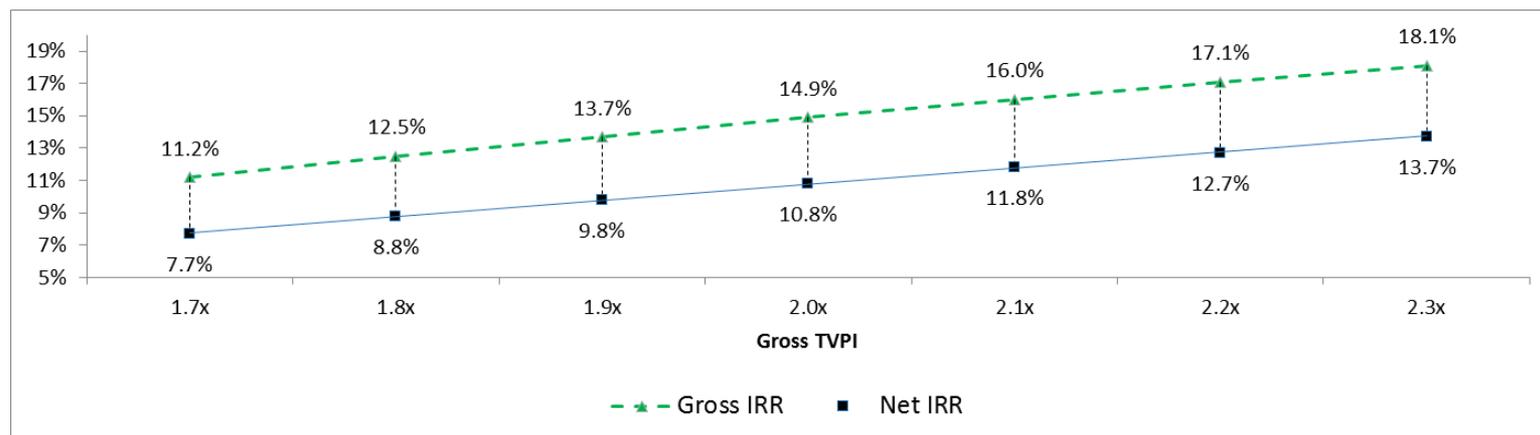
- The next chart brings OPERF's historical vintage year performance into similar analysis confirming that the program's experience has been broadly consistent with that of the overall asset class
 - OPERF outperforms both the asset class and public markets solidly in the 1980s, but also on smaller scale and episodic activity
- Since 1981, OPERF has generated 300bps of excess return relative to the Russell 3000 creating an absolute gain of \$22 billion over the nearly four decade history of the program
- However, as the last decade has shown, the private equity asset class has changed massively in terms of scale, competition, and complexity. As a result, the sources of excess return will need to look very different going forward



OPERF Private Equity Performance Review

➤ QUESTION #1 – What needs to happen to generate excess returns relative to public equities going forward?

- The chart below attempts to project fee drag at the partnership level across various gross TVPI scenarios using a set of simplifying assumptions
 - This analysis assumes a flat four year deployment period, a five year holding period for portfolio companies, an 8% preferred return, 20% carry, a deal-by-deal waterfall, and a 1.5% management fee (consistent with larger funds that make up the bulk of OPERF's addressable universe)
 - As the chart depicts, PE fee drag ranges from 350-500bps as gross TVPI ascends from 1.7x-2.8x
 - On that basis, PE's underlying portfolio company investments would need to compound in value 650-800bps faster than public companies for net results to be 300bps above public equities
 - Over the full four decade history of the program, OPERF's PE investments have probably outperformed public equities by roughly 750bps on a gross basis
 - Over the past decade, gross outperformance has probably been closer to 350bps, and all of that outperformance accrued to the GPs
- Absent substantial outperformance on a gross basis, the only other path to net outperformance is to reduce fee drag



OPERF Private Equity Performance Review

➤ QUESTION #1 – What needs to happen to generate excess returns relative to public equities going forward?

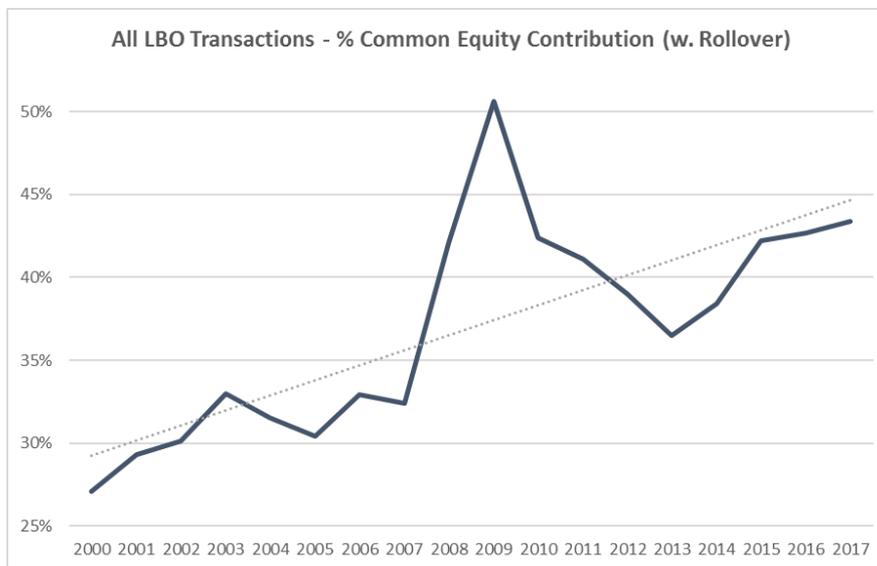
- It is important to first consider how much has changed with respect to the historical return levers for private equity as the sources of excess gains will need to be different going forward
 - **LEVERAGE** played a material role in PE's historical outperformance, but **will be a smaller factor going forward** as the relative differential in leverage between public and private markets has narrowed
 - **MULTIPLE EXPANSION** also had a significant positive impact on PE's performance relative to public equities over the long-term, but, as the private markets have become increasingly competitive/efficient, we should assume that **this factor will play little or no role in relative performance going forward**
 - **EARNINGS GROWTH** for PE backed companies in excess of what was generated by public companies was not really required to produce excess returns for much of OPERF's history in the asset class, but **this will be the most important return lever going forward**
- The three relative return attribution factors above are distinct but highly interdependent

OPERF Private Equity Performance Review

➤ QUESTION #1 – What needs to happen to generate excess returns relative to public equities going forward?

▪ LEVERAGE

- Prior to the financial crisis, leverage played a massive role in private equity return attribution as acquisitions were commonly capitalized 30% or less with equity. Since the financial crisis, the average buyout has been capitalized 40% or more with equity. The chart below captures this evolution since 2000
 - Importantly, debt levels at acquisition should represent peak leverage during the holding period as growing companies naturally delever. Equity as a percent of total enterprise value across existing portfolio companies is probably closer to 50%
 - As the new tax law phases in, debt financing becomes incrementally less attractive further diminishing the leverage factor on a forward looking basis
- By comparison, median equity as a % of EV for the Russell 3000 is currently about 80%, which is effectively where it was at the end of 2007. On this basis, the relative leverage gap has narrowed over the past decade

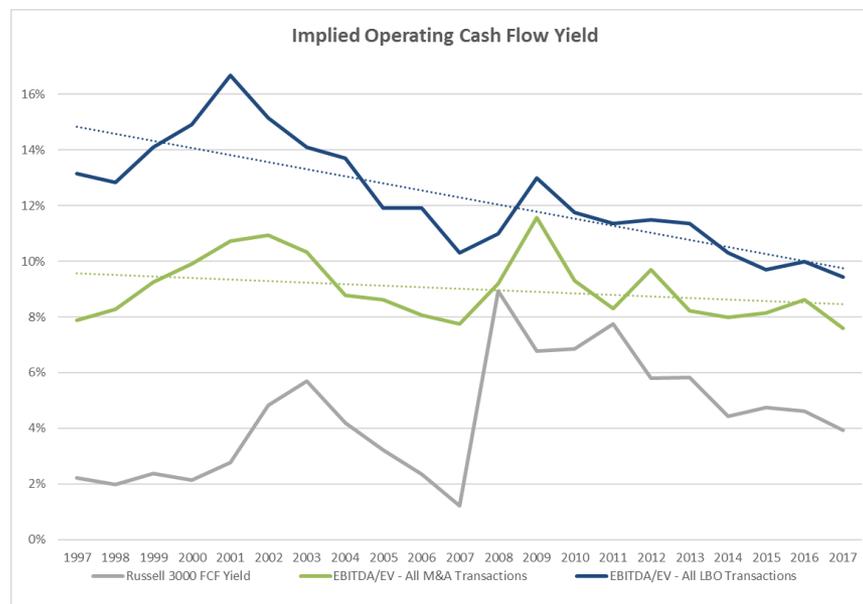


OPERF Private Equity Performance Review

➤ QUESTION #1 – What needs to happen to generate excess returns relative to public equities going forward?

▪ **MULTIPLE EXPANSION**

- In a smaller and less competitive market prior to the mid-2000s, it was not uncommon for LBOs to be acquired at valuation multiples below where comparable public companies were trading. This positioned PE to benefit from excess levels of multiple expansion in a rising price environment
 - The chart below presents implied operating cash flow yields for public equities, M&A transactions and LBO transactions over the past 20 years (note that as yield decreases multiples increase)
 - The chart reflects a high correlation of public market and M&A yields suggesting that overall M&A transaction price movements generally reflect prevailing public equity valuations
 - The steeper slope of decline for LBO yields as compared M&A seems to reflect an increasingly efficient market for PE
- Going forward, we should not assume that multiple expansion will play a meaningful role in PE relative return attribution

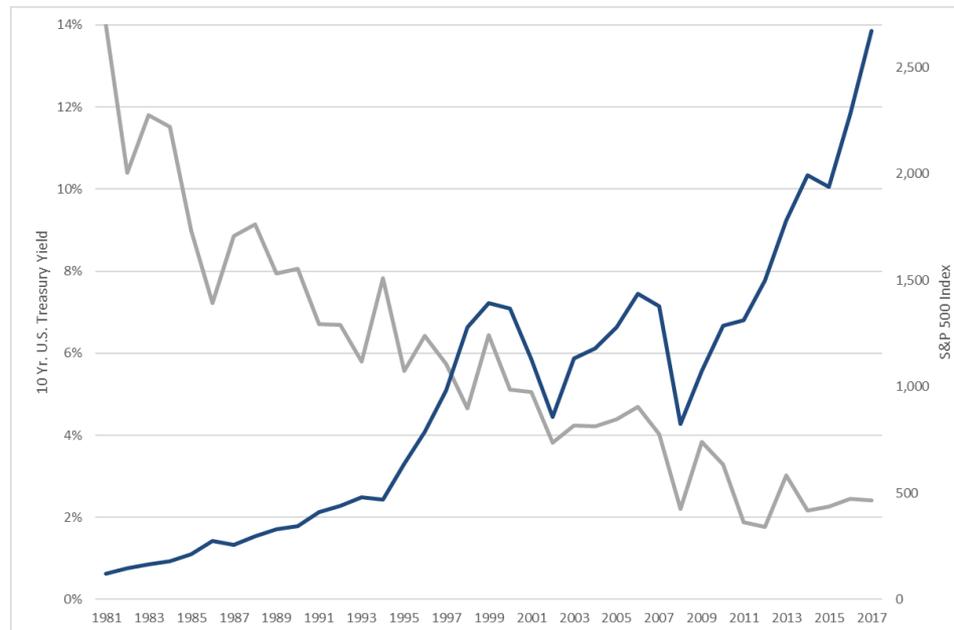


OPERF Private Equity Performance Review

➤ QUESTION #1 – What needs to happen to generate excess returns relative to public equities going forward?

▪ EARNINGS GROWTH

- For the past four decades, the secular trend in capital markets has been decreasing interest rates which reduced the cost of equity capital and translated into increasing multiples. As PE was invested through highly levered structures and benefited from excess multiple expansion during this period, very little excess earnings growth was required for PE to significantly outperform public equities
 - The chart below presents the high level capital market backdrop since the OPERF PE program commenced in 1981
- Going forward we should be prepared for this dynamic to change significantly. Private equity backed companies should need to increasingly rely on earnings CAGRs above those of public companies to generate excess return



OPERF Private Equity Portfolio – Target Allocations

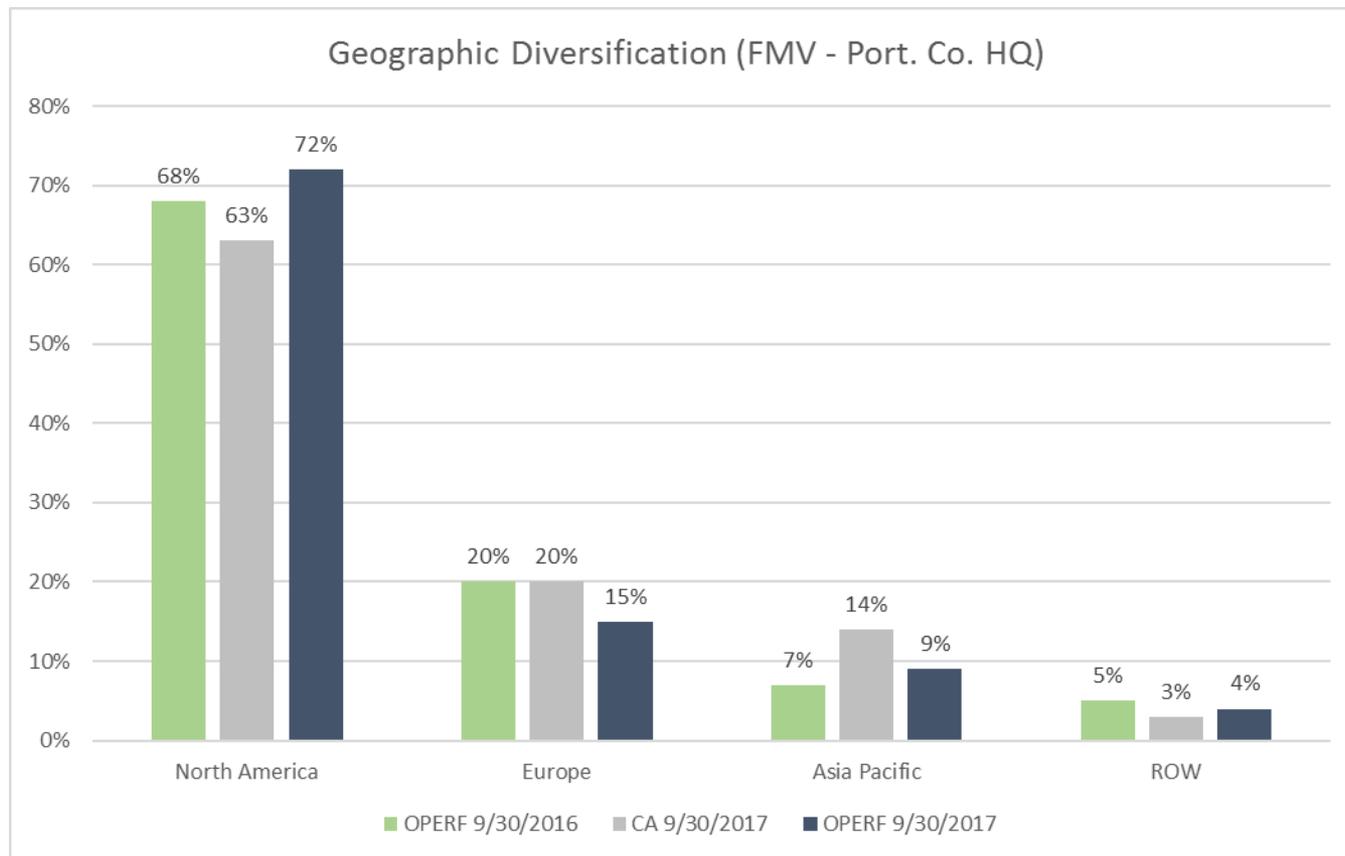
➤ The table below presents the program’s allocations relative to target with respect to strategy and geography as of September 30, 2017

- Please note that the table presents partnership level versus portfolio company level exposures
- **STRATEGY**
 - The buyout allocation continues to pivot over time to be more upper middle market oriented
 - The special situations allocation is largely corporate distressed debt as legacy secondary and mezzanine funds liquidate
 - VC exposure is in decline as legacy fund-of-fund investments liquidate. That exposure is being replaced by a growing allocation to growth equity
- **GEOGRAPHY**
 - Global funds continue to be a growing component of the portfolio and an important source of both Europe and emerging market exposure
 - Europe exposure is relatively low, but a lot has been done recently to restock and restructure that segment of the portfolio

Q3-2017	COMMITTED	FAIR MARKET VALUE	TOTAL EXPOSURE	TARGET
STRATEGY				
Buyout	79.2%	75.9%	77.1%	60-85%
Special Situations	12.1%	9.4%	10.6%	5-15%
VC & Growth Equity	8.7%	14.7%	12.4%	5-15%
<i>Venture Capital</i>	5.5%	10.5%	7.2%	
<i>Growth Equity</i>	3.2%	4.2%	5.2%	
GEOGRAPHY				
North America	74.0%	75.7%	70.1%	60-80%
International	26.0%	24.3%	29.9%	20-40%
<i>Global</i>	8.8%	10.0%	12.9%	
<i>Europe</i>	12.1%	8.5%	10.3%	
<i>Asia Pacific</i>	4.6%	5.6%	6.3%	
<i>ROW</i>	0.5%	0.2%	0.4%	

OPERF PE Portfolio – Geographic Diversification

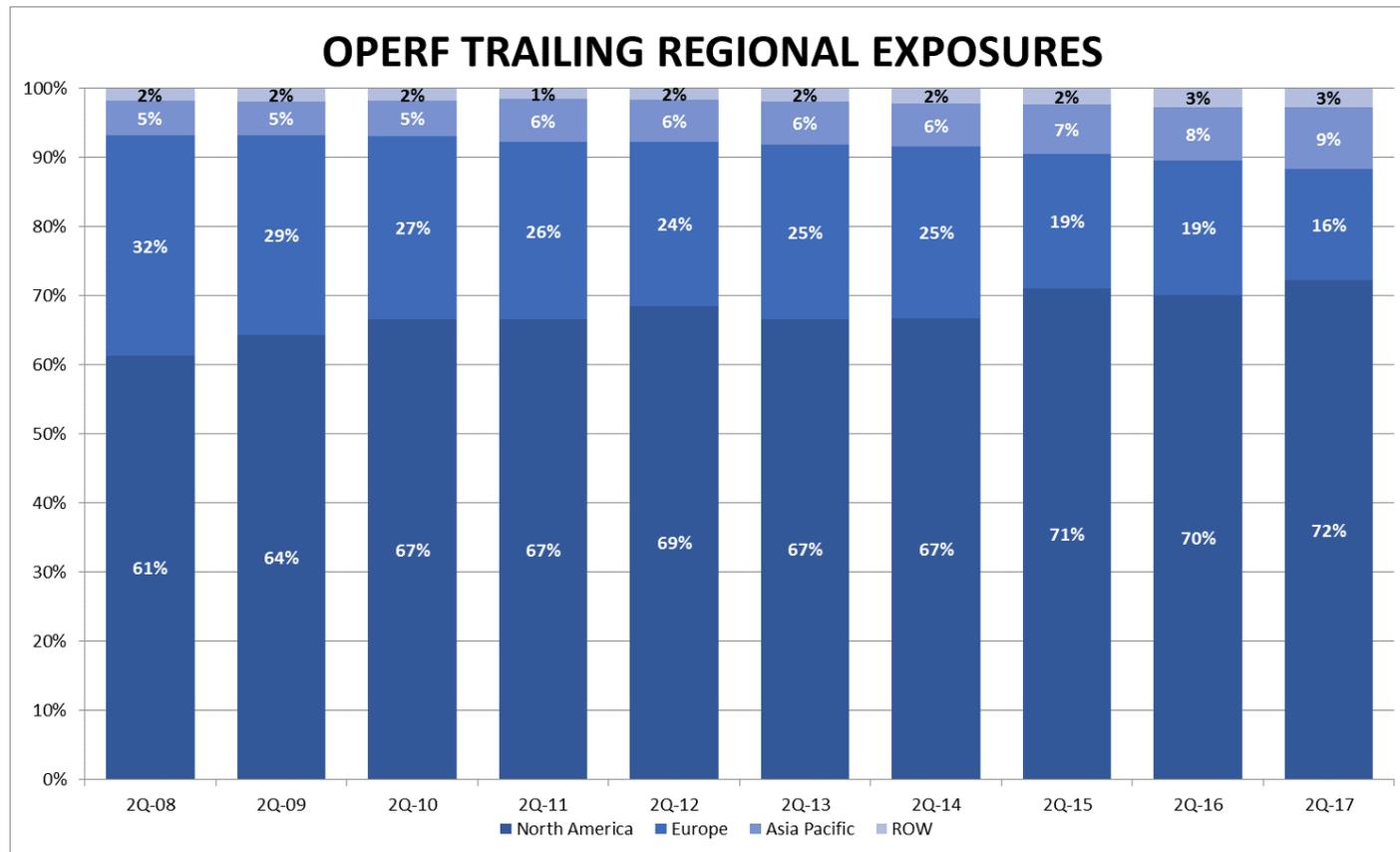
- At the portfolio company level (based on HQ), the program is currently 72% North America, 15% Europe, 9% Asia Pacific, and 4% Rest-Of-World
 - Relative to the broader CA universe, the program is more tilted toward the domestic market
 - Europe saw a material decline in exposure over the past twelve months on the basis of strong realization activity last year and limited new commitment activity from 2009 through 2015



OPERF PE Portfolio – Geographic Diversification

➤ The chart below depicts OPERF’s regional exposure progression over the past decade

- As the chart presents, OPERF’s international exposure has been in steady a decline over this period primarily on the basis of declining exposure to Europe



OPERF PE Portfolio – Geographic Diversification

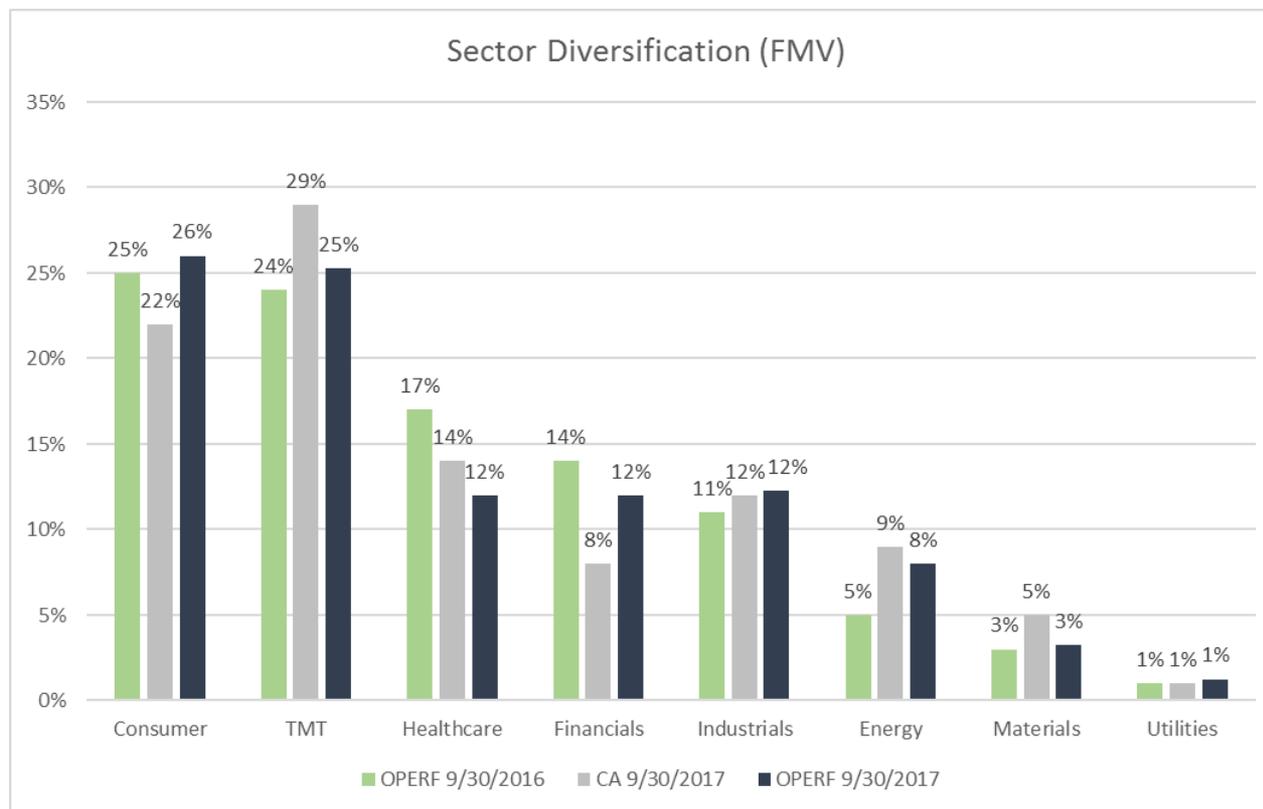
➤ The table below presents additional benchmarks in an effort to highlight the possible impact of OPERF’s relative international exposure

- The top portion of the table focuses on relative international performance within the private equity asset class
 - As the chart depicts, there would have been opportunity to improve relative performance in the 1 and 20 yr. periods by adding Europe exposure and in the 3, 5, and 10 yr. periods by adding Asia exposure
 - However, international markets are more challenging for OPERF given the scale of program and its unlikely that OPERF could have credibly captured much of that outperformance
- The bottom portion of the table focuses on the international exposure’s impact on the program’s comparison to public equities (please note that the Russell 3000 comparison includes a premium and the MSCI World comparison does not)
 - The comparison of the program’s return to the MSCI World highlights that relative performance would have looked better if we benchmarked the program to a global index vs. a domestic index
 - However, as noted in previous pages, OPERF’s international exposure is in decline and roughly 1/3 of aggregate revenues for Russell 3000 companies come from outside North America

6/30/2017	1 YR.	3 YR.	5 YR.	10 YR.	20 YR.
OPERF Program IRR	14.80%	8.00%	12.70%	8.50%	11.10%
CA All Funds Pooled IRR	15.30%	8.80%	12.70%	8.70%	12.60%
ILPA Europe PE/VC Index	23.87%	8.06%	12.91%	6.65%	14.79%
<i>Europe Value Add vs. CA (bps)</i>	857	(74)	21	(205)	219
ILPA Asia Pacific PE/VC Index	12.58%	13.55%	14.47%	11.92%	11.68%
<i>Asia Value Add vs. CA (bps)</i>	(272)	475	177	322	(92)
Russell 3000 + 300bps	26.90%	13.20%	19.60%	11.80%	11.10%
<i>OPERF Value Add (bps)</i>	(1210)	(520)	(690)	(330)	0
MSCI World mPME	18.17%	4.88%	11.89%	5.37%	6.23%
<i>OPERF Value Add (bps)</i>	(337)	312	81	313	487

OPERF PE Portfolio – Sector Diversification

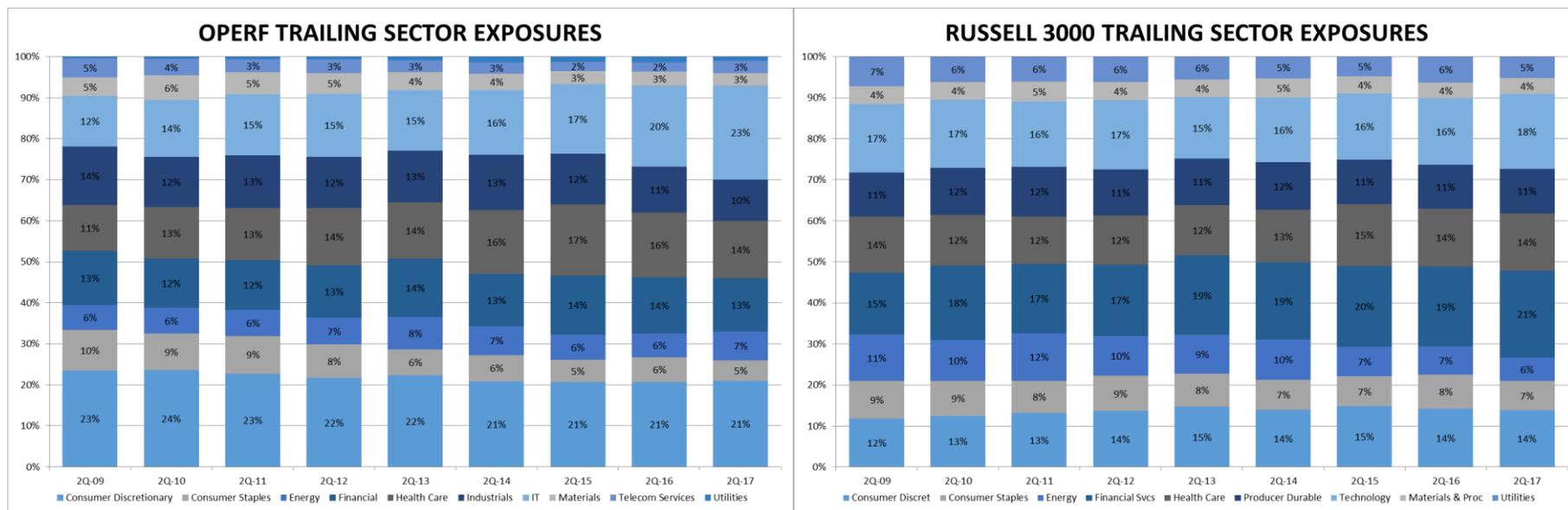
- The program is broadly diversified by sector with large allocations to consumer (discretionary & staples) and technology, media & telecom
 - 2017 saw modest increase in the allocation to consumer and TMT at the expense of healthcare and financial services
 - Relative to the broader CA universe, OPERF is overweight consumer and financials and underweight TMT and healthcare



OPERF PE Portfolio – Sector Diversification

➤ The charts below compares OPERF’s sector exposures over the past decade to the public benchmark

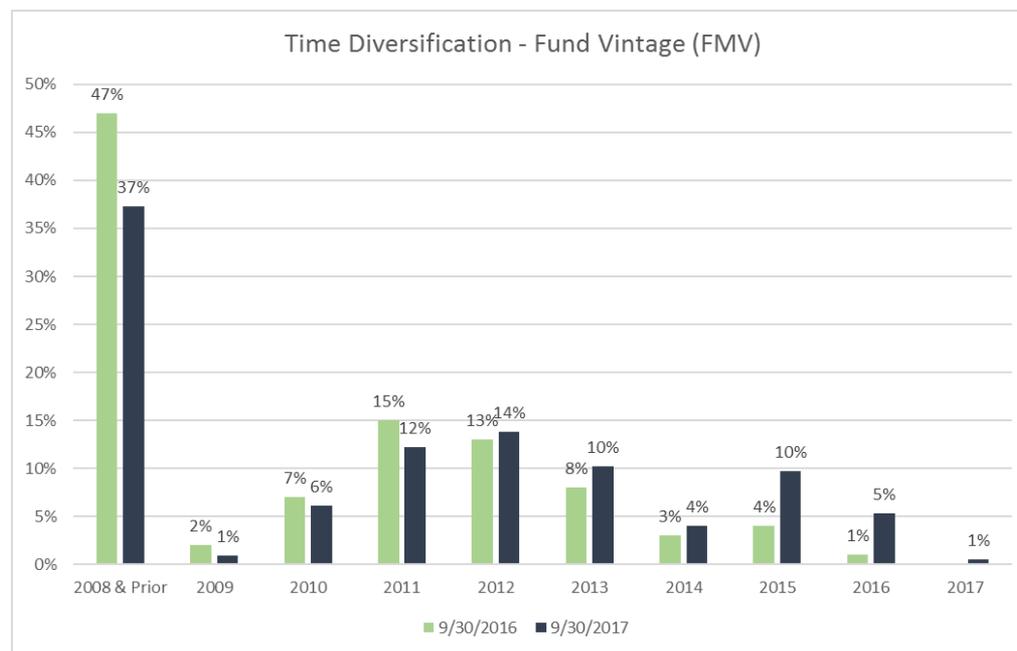
- Please note that the sector groups differ slightly across the two data sets
- The program has carried excess consumer exposure across the entire period, and the mix of consumer exposure is heavily weighted toward discretionary as compared to the Russell 3000
- OPERF has been underweight financial services to an increasing degree over the decade. This is not surprising given regulatory restrictions and the sector’s recovery during this period
- With respect to technology, OPERF started the period in a material underweight position but now stands in a material overweight position. This reflects the PE industry’s rotation into software over the time period



OPERF PE Portfolio – Time Diversification

➤ As previously noted, the program continues to carry a large exposure to pre-crisis vintage funds which has been a drag on returns

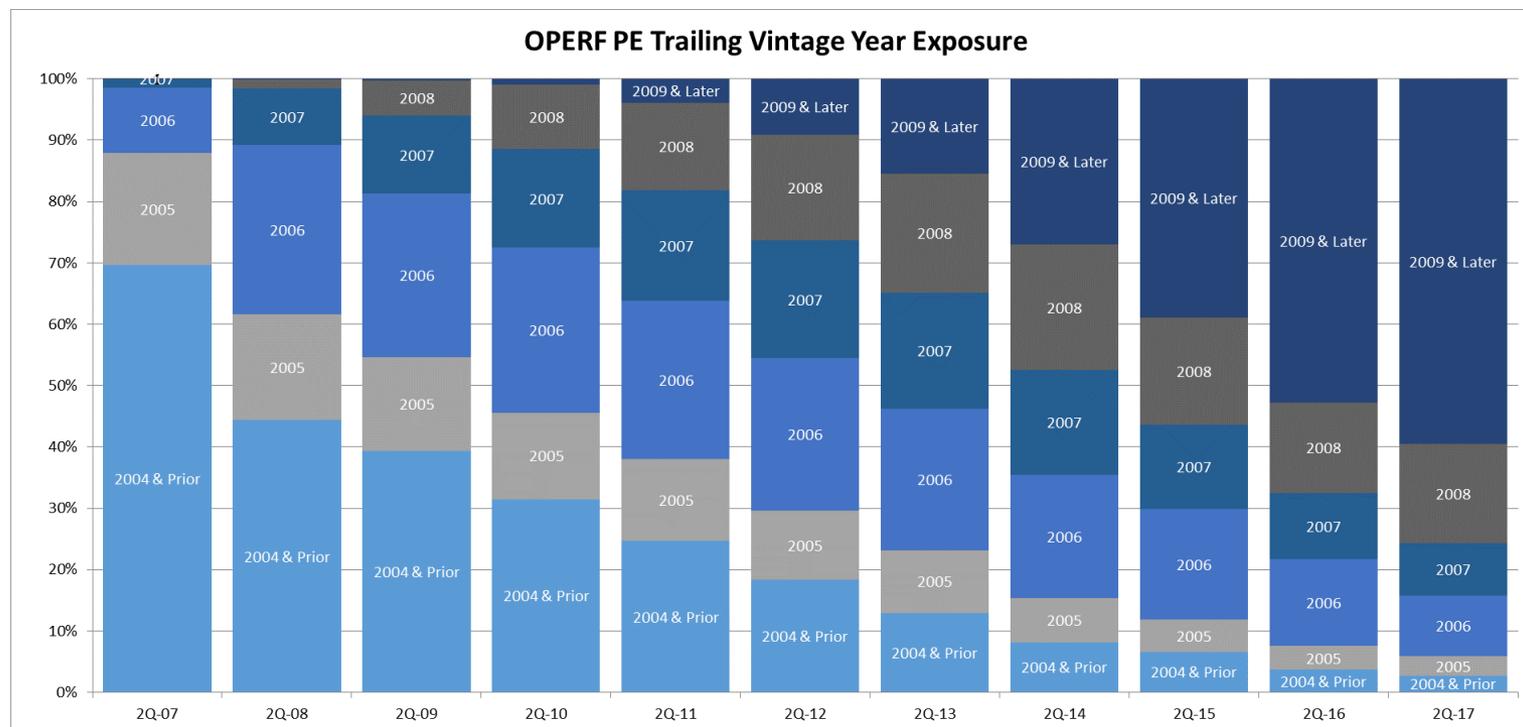
- As the chart below depicts, 37% of the portfolio's fair market value at 9/30/17 remains in fund commitments made in 2008 or before
 - This profile reflects both over-commitment going into and under-commitment coming out of the GFC
 - As a result, only 56% of the program's NAV is in three to seven year old commitments (2010-2015 vintages) which would normally comprise the majority of program exposure
 - Years three through seven in a fund's life are usually when the steepest value creation occurs. Before three years, funds are in the J-curve, while after seven years funds generally experience declining value creation



OPERF PE Portfolio – Time Diversification

➤ The chart below plots the program’s vintage year exposure at the fund level over the past decade

- As noted already, the 2005-2008 vintages have been the dominant exposure for the asset class over the past decade due to outsized commitments in that timeframe
- Given the scale of this exposure, OPERF’s returns over this timeframe are largely a function of the returns from those vintages



OPERF PE Portfolio – Time Diversification

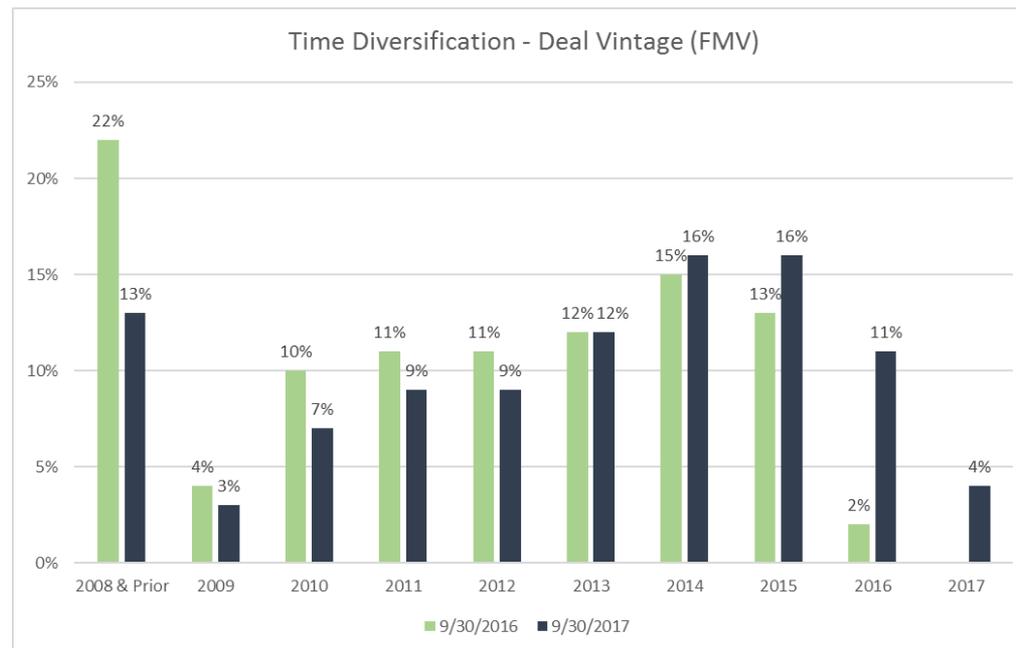
- The chart below presents the program’s horizon returns over the past decade highlighting the outsized, negative impact of the 2005-2008 vintages
- In all timeframes below, these four vintages collectively underperform the overall program
 - Recall that the program’s performance in all four vintages is above median as compared to the private equity asset class. The issue has been the over-commitment to these vintages (in \$), not fund selection within these vintages
 - These commitments are now 10-14 years old and continue to represent nearly 40% of the program’s fair market value. As such, we should expect this exposure to be a drag on performance for the foreseeable future

	1 Year IRR	2 Year IRR	3 Year IRR	5 Year IRR	10 Year IRR
2005 Vintage	10.3%	7.6%	9.0%	12.3%	6.7%
2006 Vintage	12.7%	5.3%	5.0%	10.4%	7.1%
2007 Vintage	14.1%	10.1%	8.3%	11.0%	9.4%
2008 Vintage	12.4%	8.7%	8.0%	13.8%	12.1%
All Vintages	15.3%	11.0%	9.7%	12.7%	8.7%

OPERF PE Portfolio – Time Diversification

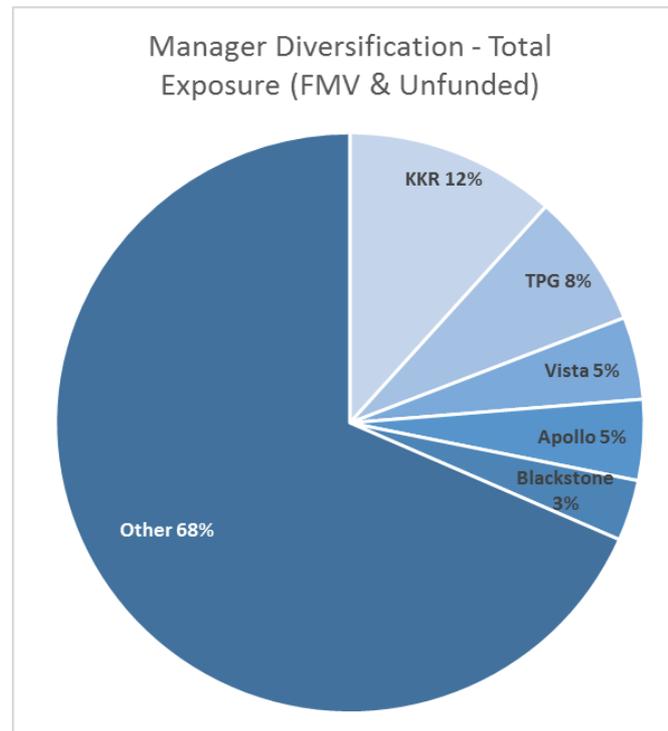
➤ The program currently has more than a third of its NAV in portfolio companies that have been held beyond the target five-year hold period

- As the chart below presents, the program carries 37% exposure to deals that have been in the portfolio for five years or more (deal vintages 2012 and before)
 - This attribute dovetails with the over-commitment to pre-crisis funds, but an extended deployment period for certain 2008 vintage funds helps to reduce that impact slightly
 - PE underwriting cases will typically anticipate the bulk of deal level appreciation to come in years three through five of the holding period



OPERF PE Portfolio – Manager Diversification

- The chart below presents the program’s manager concentration highlighting the 32% allocation to the top five GP relationships
 - The manager roster has been both narrowed and flattened considerably in recent years
 - Given the target commitment pace and target commitment range, we would anticipate settling at roughly 40-50 GP relationships
 - Once this plan is fully implemented, we would anticipate individual GP exposures settling in a 2-8% range (exposures to unique fund series would settle in a 2-5% range)



2018 Private Equity Plan – Implementation

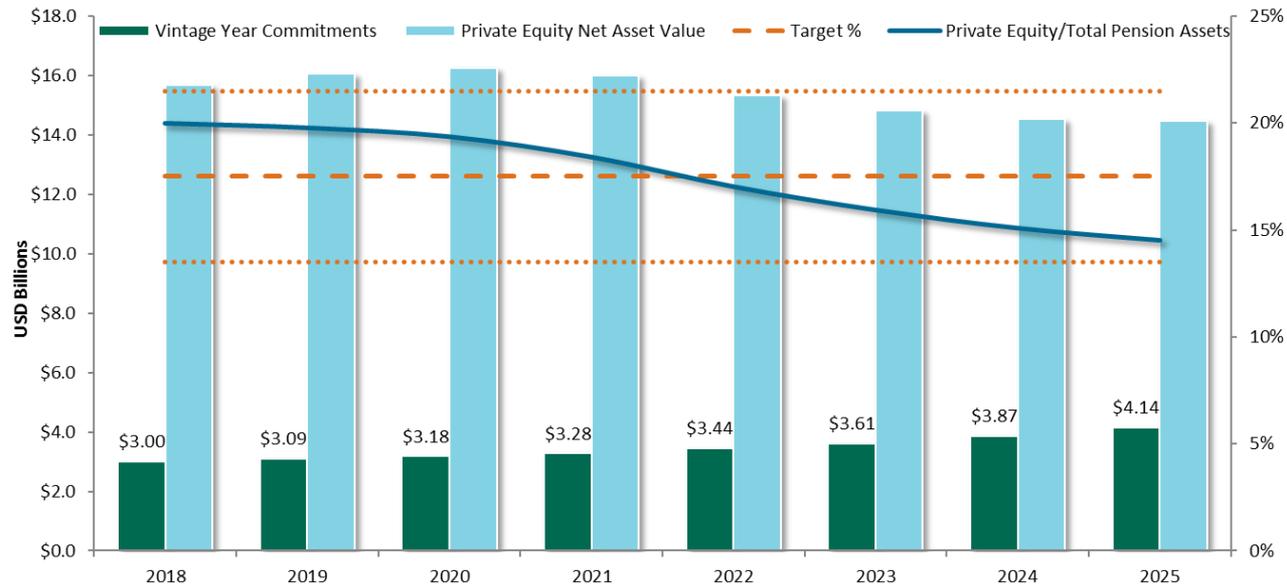
➤ QUESTION #2 – What implementation plan is needed for OPERF to optimally capture excess return relative to public equities in a more challenging and complex environment?

- **PACING** – As agreed in the 2017 annual plan, OPERF will endeavor to pursue smoothed pacing going forward
 - While pacing is never completely in our control, we will seek to avoid lumpy pacing to the extent possible
 - The extended run-off of the program’s 2005-2008 fund commitments will slow the program evolution outlined below
- **MANAGER SELECTION** – OPERF’s current implementation is heavily weighted toward primary fund commitments making manager selection the program’s key lever
 - As noted above, the program’s managers will need to produce 650-800bps of excess gross return at the portfolio company level for this implementation strategy to deliver 300bps of excess net return relative to public equities. This feels like an aggressive assumption
 - Relying only on manager selection is unlikely to succeed as the majority of the GP universe is too small to be included in OPERF’s addressable market given size, structural, statutory, and resource factors
- **FEE/CARRY MITIGATION** – Any reduction in fee drag will correspondingly decrease the level of gross outperformance needed on the part of the program’s managers. This could come in the form of negotiated/structured discounts, co-investments, etc.
 - As with the manager selection lever, OPERF is somewhat limited with respect to the fee mitigation lever on the basis of various structural, statutory, and resource factors
- Given that OPERF faces limitations with respect to both levers outlined above, the program will need to balance the two objectives to optimally capture excess return going forward
 - OIC/OST has focused heavily on optimizing manager selection in recent years as the program’s GP roster has been rationalized and due diligence and monitoring processes have been updated
 - As changes to the manager selection process continue to take hold, a slow pivot to fee/carry mitigation commenced in 2017 with an initial focus on delivering negotiated or structural discounts
 - The next phase of evolution to start in 2018 will be to identify a discretionary co-investment solution
 - The long-term plan calls for fee/carry mitigation solutions to phase-in over multiple years which dovetails with the gradual run-off of the program’s long-dated fund commitments (2005-2008 vintages)

2018 Private Equity Plan – Investment Pacing

➤ Per TorreyCove’s pacing study, the recommendation remains \$2.5-3.5 billion of commitments per annum in each of the 2018-2020 vintages

- This recommendation mirrors the recommendation made in 2016 and 2017, and it represents the continuation of a smoothed pacing plan
 - The slow run-off of 2005-2008 vintage commitments continues to create massive challenges in modeling these projections, but steady pacing remains the best course of action for the long-run
- Per the existing plan, OST staff anticipate recommending 10-15 commitments of \$100-500 million (\$250-300 million on average)
- The output of the horizon model used to create this forward pacing recommendation is presented in the chart below. Further detail on this exercise is available in TorreyCove’s review of the program (Appending B)



2018 Private Equity Plan – Initiatives

2018 OST Private Equity Staff Priorities

1. \$2.5-3.5 billion of new fund commitments
 - 10-15 commitments with a continued focus on an average commitment size of \$250-300 million

2. Exploit opportunities to reduce fee drag
 - Continue to exploit negotiated fee and carry discount opportunities
 - Identify a discretionary co-investment solution

3. Private Equity Team Capacity
 - Recruit, onboard, and integrate new team capacity
 - Two IOs to join in Q1 – one additional IO recruitment to kick-off over the next 12 months

4. Continue to pursue enhancements to due diligence and monitoring processes
 - With additional staff capacity, enhanced data capture and monitoring output will be the 2018 focus

OPERF PE Annual Review & 2018 Plan

Appendix A – 2017 Private Equity Market Review

February 1, 2018



Oregon State Treasury

2017 Private Equity Market Review - Agenda

➤ Executive Summary

➤ Investment Environment

- M&A Activity
- Corporate Leveraged Finance Activity
- Private Equity Returns
- U.S. Private Equity Update
- U.S. Venture Capital Update
- Europe Private Equity Update
- General Industry Update

Executive Summary

➤ M&A Activity

- Developed market volumes through 9/30/17 are 20% below where they stood in 2016, but activity remains reasonably strong and volumes have been robust since 2014. PE continues to account for a relatively stable share of volumes at 23%
- M&A transaction multiples averaged 10.3x EV/EBITDA through the first three quarters of 2017 eclipsing the 10.0x mark set in 2016

➤ Corporate Leverage Finance Activity

- 2017 was a record year for new issue volumes in the U.S. and Europe with roughly \$1.2 trillion of total leveraged loan and high yield issuance

➤ Private Equity Returns

- At the asset class level, private equity has produced results broadly consistent with domestic public market indices over the past decade, and the asset class has significantly underperformed over the past five years
- The asset class has not generated anything close to the 250-500bps of target excess return over public equities for an extended period of time. That level of excess return would have required nearly perfect fund selection or material fee reduction in all vintage years since 2005

➤ Private Equity Activity Update

- At 9/30/17, fundraising was 12% ahead of 2016 in the U.S. and 10% ahead in Europe. There continues to be significant excess demand allowing GPs to raise capital quickly hitting increasing fundraising targets more easily while also negotiating more aggressively
- At 9/30/17, new investments activity was down 11% in the U.S. but up 12% in Europe
- In this high priced environment, GPs are targeting the “Goldilocks Zone” claiming to acquire high quality assets in sectors that exhibit lower cyclical on ambitious forward growth projections. GPs have also increasingly turned to add-on acquisitions as a key value creation lever
- In the U.S., year to date exit activity in 2017 is 33% behind activity at this point in 2016, 46% behind the 2015 pace and 30% behind the 2014 pace. Strategics have been less acquisitive this year, and current PE inventory (portfolio companies) is getting older
- Exit activity in Europe continues to be strong

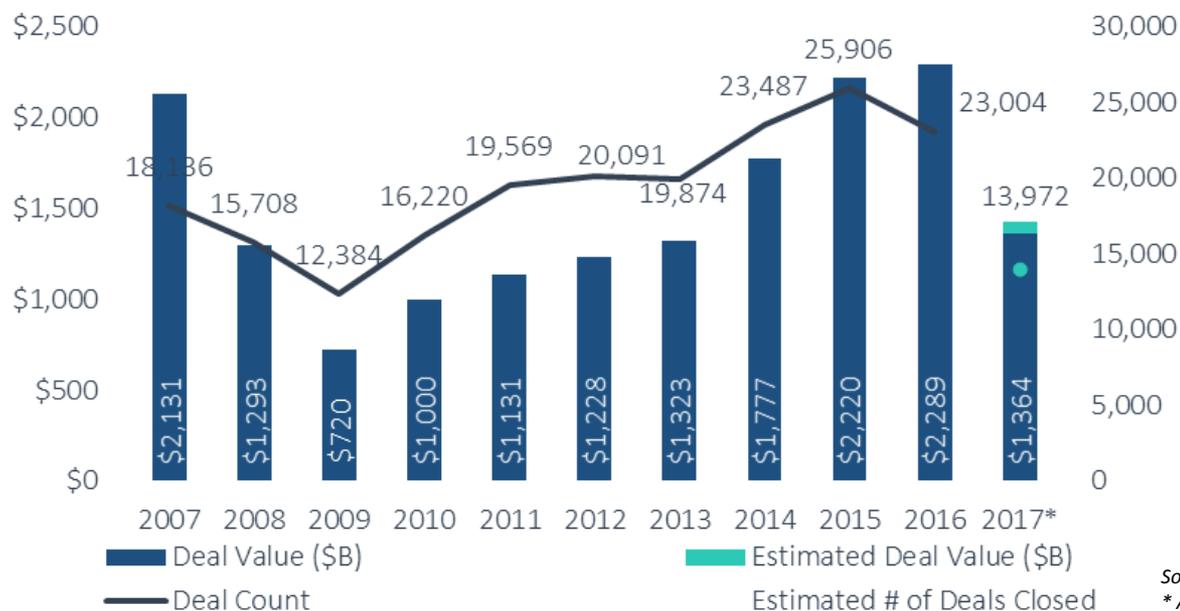
➤ General Industry Update

- Key industry trends that gained momentum in 2017 include the sale of GP stakes and expanded usage of subscription lines. Each of those trends represent an increase in complexity/opacity for LPs
- The impact of U.S. tax reform will take some time to fully ascertain, but we should anticipate a mixed effect. Leverage levels and forward growth potential will determine winners and losers among existing portfolio companies. On new investments, the buyout model clearly needs to adjust, but this should accelerate an established trend away from financial engineering to operational intervention

The market is hot, relative returns have been weak, and complexity is increasing

M&A Activity – Developed Market Volumes

- Through the first three quarters of 2017, Pitchbook recorded nearly 14k M&A transactions in North America and Europe with an aggregate value of \$1.4 trillion
 - Aggregate volumes through the first three quarters of 2017 are 20% below where they stood at the same time in 2016. However, activity remains reasonably strong and volumes have been robust since 2014
 - In line with 2015 and 2016, regional distribution is roughly 2/3 North America and 1/3 Europe
 - Deal values continue to skew larger with an average M&A deal size (enterprise value) of \$529 million. This compares to \$437 million in 2016 and \$354 million in 2015
 - The chart below presents annual developed market M&A volumes since 2007 using the Pitchbook data set

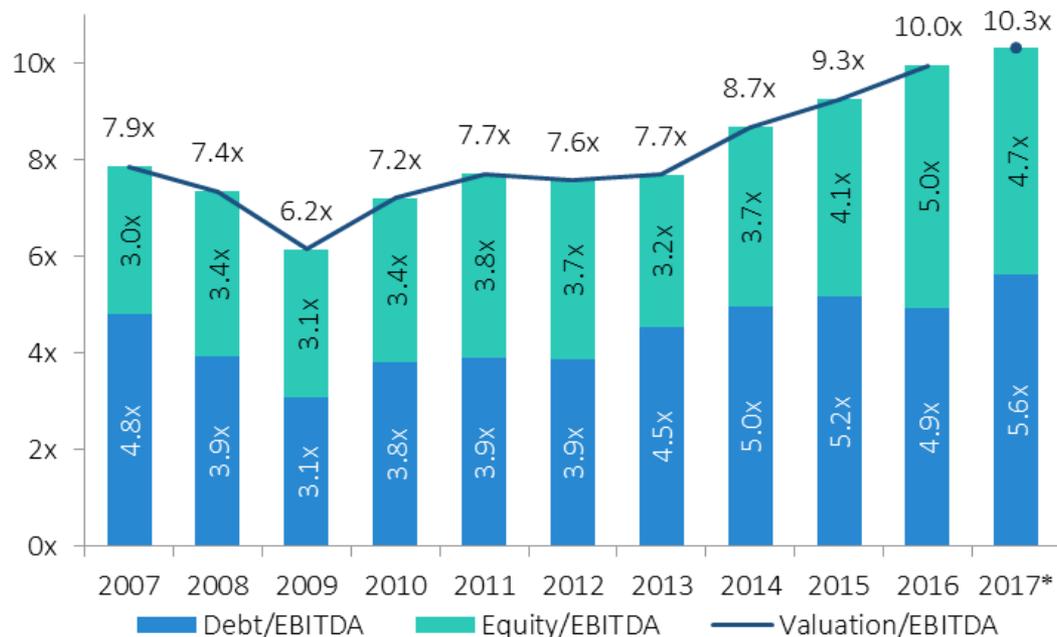


Source: Pitchbook
* As of 9/30/17

M&A Activity – Transaction Multiples

➤ Through the first three quarters of 2017, M&A transaction multiples averaged 10.3x EV/EBITDA eclipsing the 10.0x mark set in 2016

- Valuations in the third quarter of 2017 hit 11.0x EV/EBITDA
- Valuations remain extremely high by historical standards having moved up strongly beginning in 2013
- Debt as a percent of deal financing ticked up to 55% year-to-date from 50% in 2016. However, headline multiples for levered M&A transactions feel understated based on increasingly aggressive EBITDA adjustments
- The chart below presents average M&A transaction multiples each year since 2007 using the Pitchbook data set

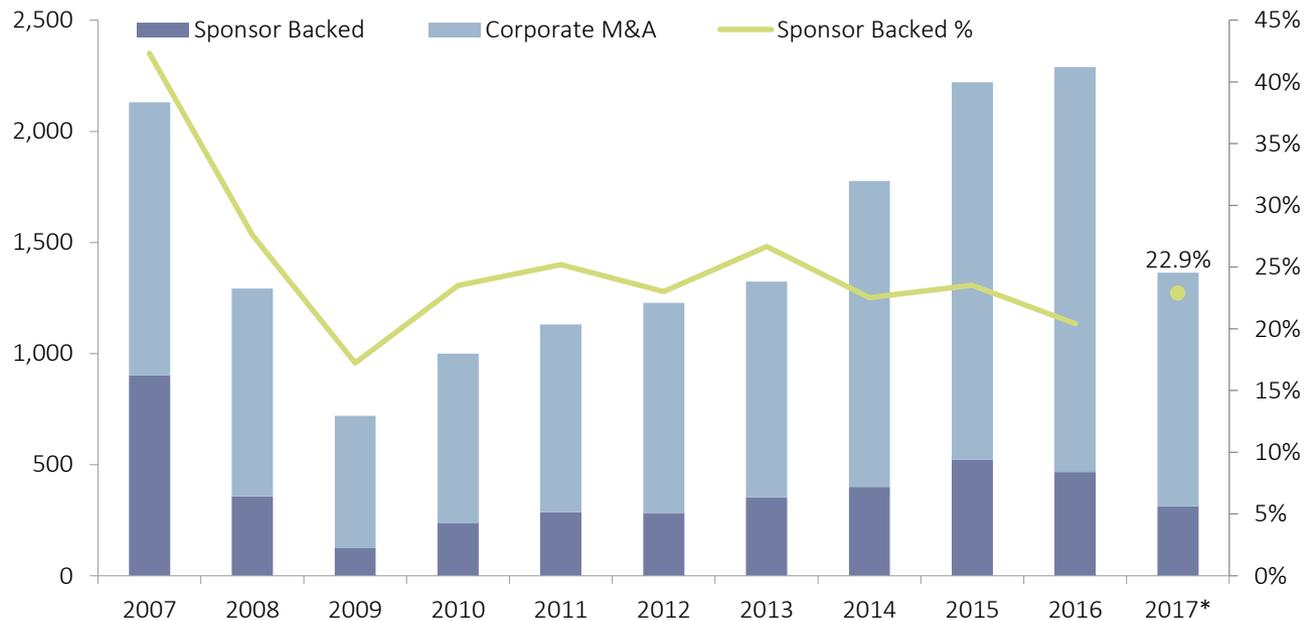


Source: Pitchbook
* As of 9/30/17

M&A Activity – Private Equity Market Share

➤ Despite the strong uptick in developed market M&A volumes that began in 2014, Private Equity sponsors have maintained a reasonably stable share of overall activity

- PE sponsors led 23% of M&A activity by volume through the first three quarters of 2017. This compares to 23% in 2014, 24% in 2015, and 20% in 2016
- The chart below presents PE sponsors' share of developed market M&A activity each year since 2007 using the Pitchbook data set



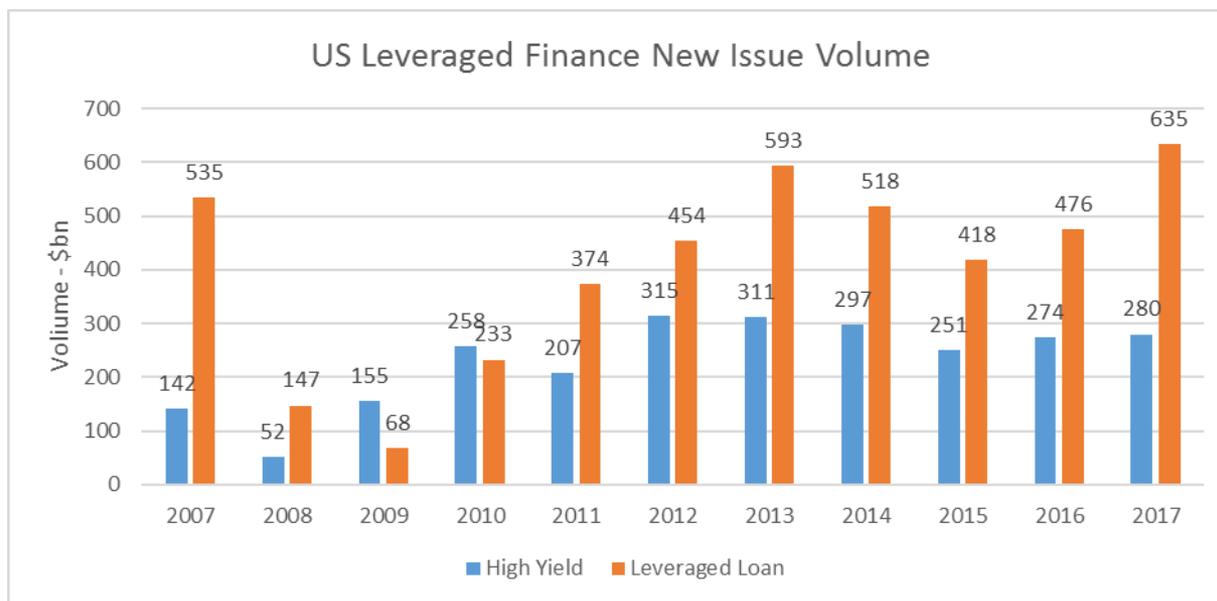
Source: Pitchbook
* As of 9/30/17



Corporate Leveraged Finance Activity – U.S.

➤ 2017 was a record year for new issue volumes in the U.S. with more than \$900 billion of total leveraged loan and high yield issuance

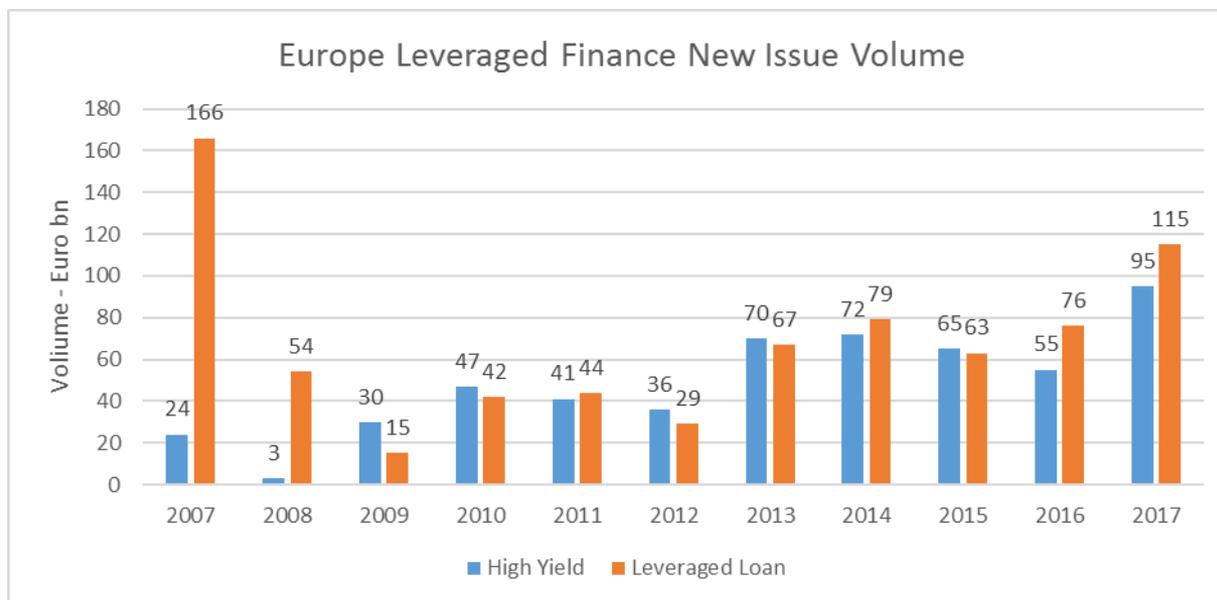
- Leveraged Loan new issue volume set a new record at \$635 billion exceeding the \$593 billion mark set in 2013
 - 2017 volumes outpaced the 2016 new issue rate by 33%
 - Yields for all loans (as tracked by LCD) were effectively flat over the course of the year finishing at 5.2%
- HY new issue volumes came in at a robust \$280 billion
 - 2017 volumes were broadly in line with 2016 volumes
 - The BAML HY Index closed the year yielding 5.8%. Yields and spreads decreased by 34bps and 64bps, respectively over the course of the year
- The chart below presents U.S. leveraged finance new issue volumes since 2007



Source: BAML, LCD & Bloomberg as of 12/18/17

Corporate Leveraged Finance Activity – Europe

- 2017 was also a record year for new issue volumes in the Europe with more than €210 billion of total leveraged loan and high yield issuance
 - Leveraged Loan issue volume was €115 billion exceeding 2016 activity by 51%
 - Based on strong demand spreads came down 40-50bps over the course of the year
 - HY new issue volumes set a new record at €95 billion easily exceeding the €72 billion mark set in 2014
 - 2017 volumes were 73% above of 2016 volumes
 - The Bloomberg Euro HY Index closed the year yielding 2.5%. Yields and spreads decreased by 181bps and 168bps, respectively over the course of the year
 - The chart below presents Europe leveraged finance new issue volumes since 2007



Private Equity Returns – Absolute Results

➤ The chart below presents trailing horizon net IRRs for the ILPA Private Equity Benchmark as of June 30, 2017

- Returns for the year ending June 30, 2017 we strong on an absolute basis with the “All Funds Index” generating a net IRR of 15.3%
 - The best returns in the past year were generated in Europe (23.9%) while North American Venture Capital was the weakest segment (8.1%)
- The ten-year return for the asset class continues to disappoint on an absolute basis generating only 8.7% per annum
 - Asia has been the bright spot over the past decade generating 11.9%

All Funds: Fund Index Summary: Horizon Pooled Return Net to Limited Partners

Index	1-Quarter	YTD	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	25-Year	30-Year
ILPA Private Markets Benchmark – All Funds Index¹	4.26	8.07	15.25	8.54	12.59	8.72	11.91	12.58	13.74	13.39
<i>ILPA Private Markets Benchmark – US/Canada Private Equity Index¹</i>	<i>3.51</i>	<i>7.53</i>	<i>16.78</i>	<i>9.19</i>	<i>13.57</i>	<i>9.37</i>	<i>12.96</i>	<i>12.24</i>	<i>13.38</i>	<i>13.10</i>
<i>ILPA Private Markets Benchmark – US/Canada Venture Capital Index¹</i>	<i>1.44</i>	<i>4.71</i>	<i>8.10</i>	<i>10.09</i>	<i>13.91</i>	<i>8.99</i>	<i>8.20</i>	<i>23.58</i>	<i>27.10</i>	<i>18.88</i>
<i>ILPA Private Markets Benchmark – Europe Private Equity & Venture Capital Index (\$)¹</i>	<i>12.60</i>	<i>17.16</i>	<i>23.87</i>	<i>8.06</i>	<i>12.91</i>	<i>6.65</i>	<i>15.07</i>	<i>14.79</i>	<i>14.37</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Asia/Pacific Private Equity & Venture Capital Index¹</i>	<i>3.36</i>	<i>8.15</i>	<i>12.58</i>	<i>13.55</i>	<i>14.47</i>	<i>11.92</i>	<i>12.71</i>	<i>11.68</i>	<i>11.54</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Distressed Securities Index¹</i>	<i>3.70</i>	<i>7.20</i>	<i>16.22</i>	<i>6.62</i>	<i>11.39</i>	<i>9.46</i>	<i>11.28</i>	<i>11.25</i>	<i>11.56</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Private Credit Index¹</i>	<i>3.18</i>	<i>6.16</i>	<i>13.48</i>	<i>6.14</i>	<i>10.57</i>	<i>9.51</i>	<i>10.72</i>	<i>10.26</i>	<i>10.76</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Natural Resources Index^{1,2}</i>	<i>-0.83</i>	<i>1.16</i>	<i>12.73</i>	<i>-4.92</i>	<i>1.12</i>	<i>4.34</i>	<i>9.01</i>	<i>9.17</i>	<i>9.24</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Fund of Funds Index¹</i>	<i>3.21</i>	<i>5.84</i>	<i>10.39</i>	<i>8.92</i>	<i>11.58</i>	<i>7.93</i>	<i>9.32</i>	<i>8.78</i>	<i>8.83</i>	<i>—</i>
<i>ILPA Private Markets Benchmark – Secondary Funds Index¹</i>	<i>4.96</i>	<i>8.18</i>	<i>14.06</i>	<i>8.11</i>	<i>10.90</i>	<i>9.31</i>	<i>11.66</i>	<i>11.75</i>	<i>12.19</i>	<i>—</i>

Source: ILPA

Private Equity Returns – Relative Results

- The chart below compares trailing horizon net IRRs for the ILPA Private Equity Benchmark to a modified private market equivalent utilizing different public market indices (as of 6/30/17)
 - As the chart reflects, the private equity asset class has failed to deliver the commonly targeted 250-500 basis points of excess return relative to public equities for the past decade
 - 10-year returns look better when compared to the global index, but private equity continues to exhibit a strong North America bias
 - The red box highlights the comparison to the Russell 3000 Index as OPERF’s private equity benchmark is the Russell 3000 + 300bps

All Funds: Fund Index Summary: Horizon Pooled Return Compared to CA Modified Public Market Equivalent (mPME) Net to Limited Partners

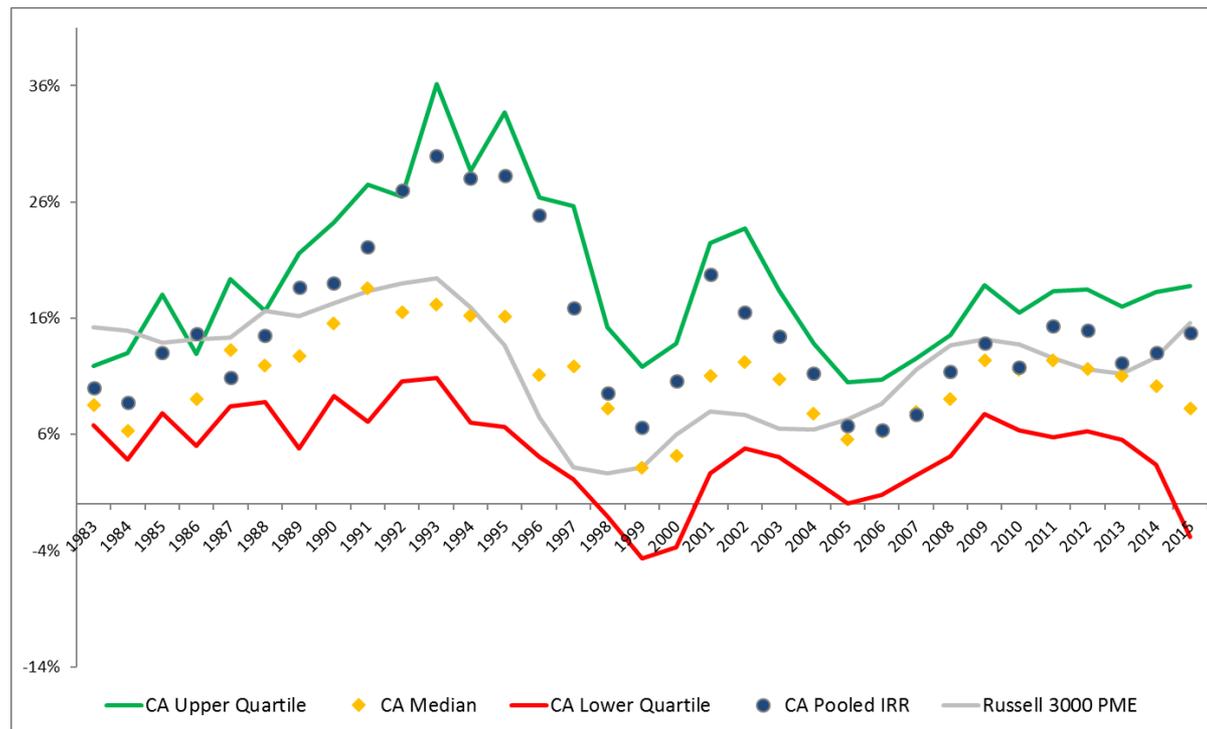
ILPA Index	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	25-Year	30-Year
ILPA Private Markets Benchmark – All Funds Index ¹	15.25	8.54	12.59	8.72	11.91	12.58	13.74	13.39
mPME Analysis ²								
S&P 500 Index	17.90	9.32	15.17	8.65	9.25	8.27	8.96	9.06
Value-Add (bps)	-264	-77	-258	6	266	431	478	433
Russell 3000® Index	18.55	8.78	15.20	8.73	9.48	8.49	9.13	9.22
Value-Add (bps)	-329	-24	-262	-2	244	410	461	418
MSCI World Index (net)	18.17	4.88	11.89	5.37	7.19	6.23	6.62	6.54
Value-Add (bps)	-292	366	70	335	472	635	713	686
MSCI Europe Index (net)	21.01	-0.56	9.46	2.10	5.48	4.86	5.32	5.42
Value-Add (bps)	-576	910	313	661	644	772	843	798

Source: ILPA

Private Equity Returns – Relative Results

➤ The chart below plots the quartile IRR marks, pooled average IRR, and Russell 3000 PME using the All Funds Index for each vintage year since 1983

- As the chart reflects, investing in private equity in an indiscriminant, index like manner (Pooled Average Return) would have generated material alpha versus the public markets (Russell 3000 PME) for the first two decades of this data set
- The chart further reflects that since 2005, the asset class (pooled average) has generated returns equivalent to or below the public markets (Russell 3000 PME). During this period top quartile results were required to get a reasonable excess return from the asset class

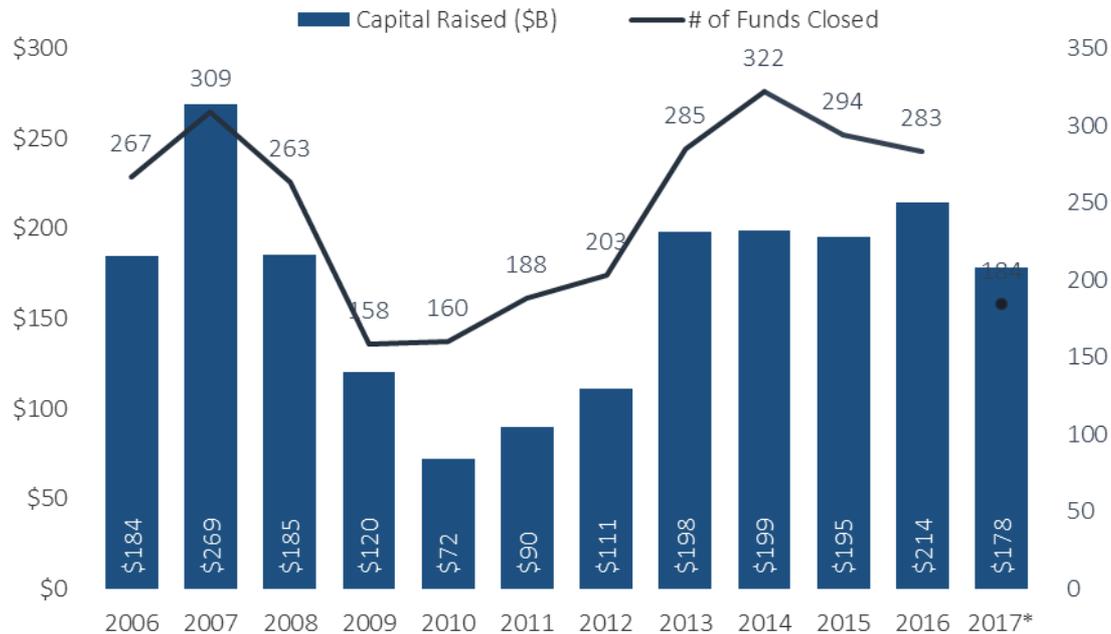


Source: Cambridge Associates, ILPA

U.S. Private Equity Update - Fundraising

➤ Through the first three quarters of 2017, \$178 billion had been raised across 194 U.S. private equity funds

- With respect to the amount of capital raised, year to date fundraising is 12% ahead of where it stood at this point in 2016
- However, the number of funds raised year to date is 8% below the 2016 pace and the median and average fund size is up 11% and 27%, respectively over last year
- The \$233 billion raised over the trailing four quarters is still 15% below the record 12 month pace set in Q4 2007
- The chart below presents U.S fundraising activity each year since 2006 using the Pitchbook data set



Source: Pitchbook
* As of 9/30/17

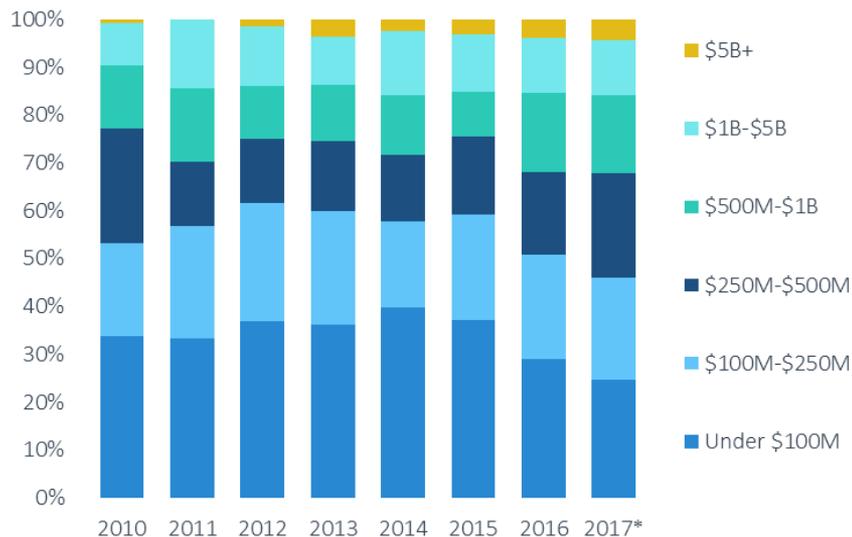


U.S. Private Equity Update - Fundraising

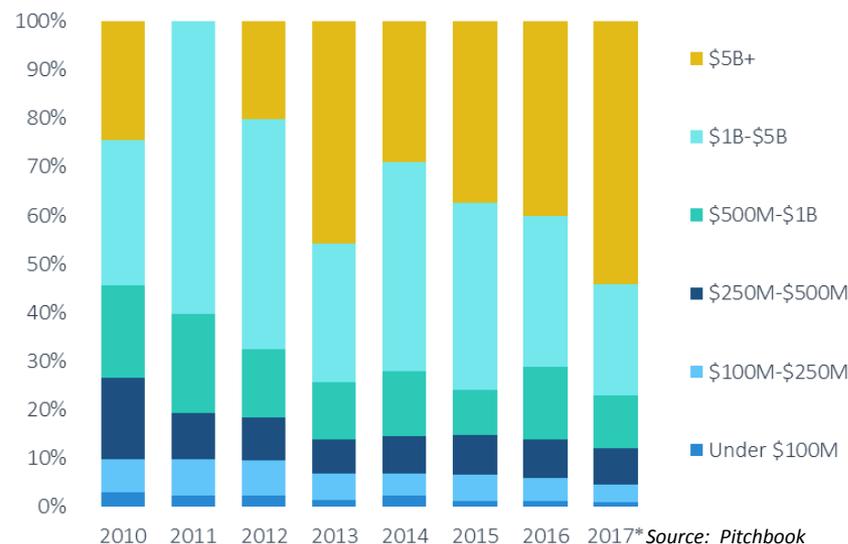
➤ U.S. fundraising continues to be dominated by larger funds

- In the first three quarters of 2017, 85% of funds closed on committed capital of \$1 billion or less while 77% of all capital raised was collected by funds with more than \$1 billion of committed capital
- To date in 2017, funds with \$5 billion or more of committed capital account for the largest share of overall fundraising activity (by \$) since the 2007-2008 timeframe
 - High profile fundraises include Silver Lake Partners V (\$15 billion) and Apollo Investment Fund IX (\$25 billion) which is now the largest buyout fund ever raised
- The charts below present the fund size mix for U.S fundraising activity each year since 2010 using the Pitchbook data set

US PE Fundraising (#) by Size & Year



US PE Fundraising (\$) by Size & Year

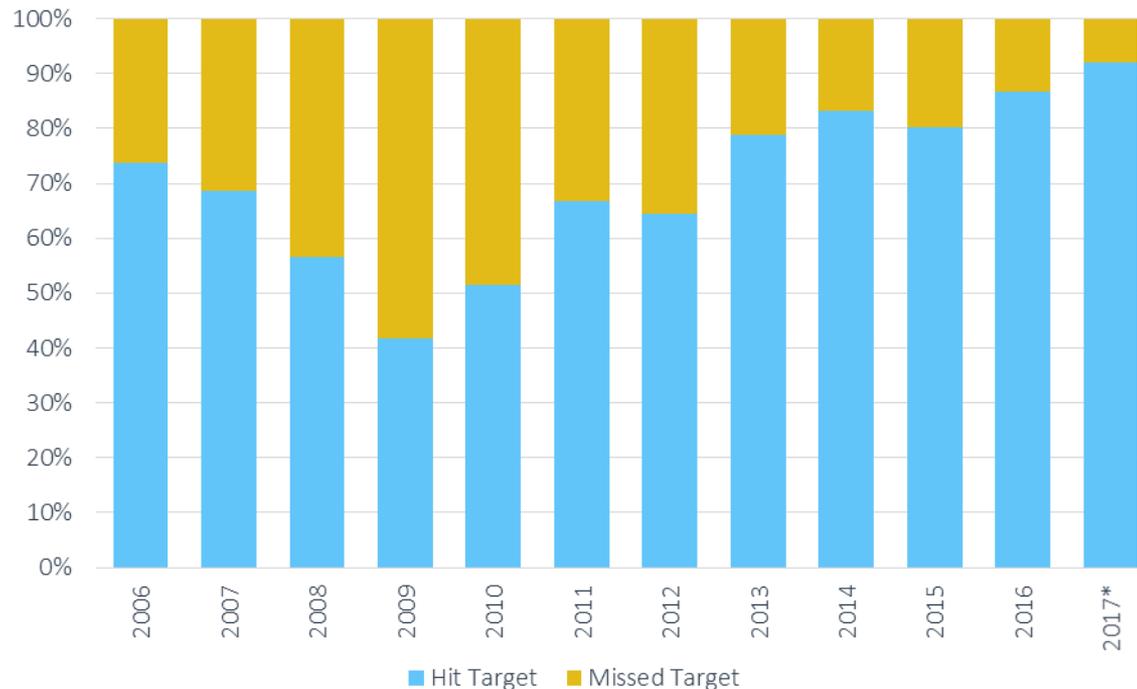


Source: Pitchbook
* As of 9/30/17

U.S. Private Equity Update - Fundraising

➤ Demand continues to outpace supply with 92% of funds raised in the first half of 2017 hitting or exceeding their fundraising target

- The proportion of funds hitting their target is at an all time high exceeding the 87% mark hit in 2017
- The chart below presents the proportion of funds hitting versus missing their fundraising target each year since 2006 using the Pitchbook data set



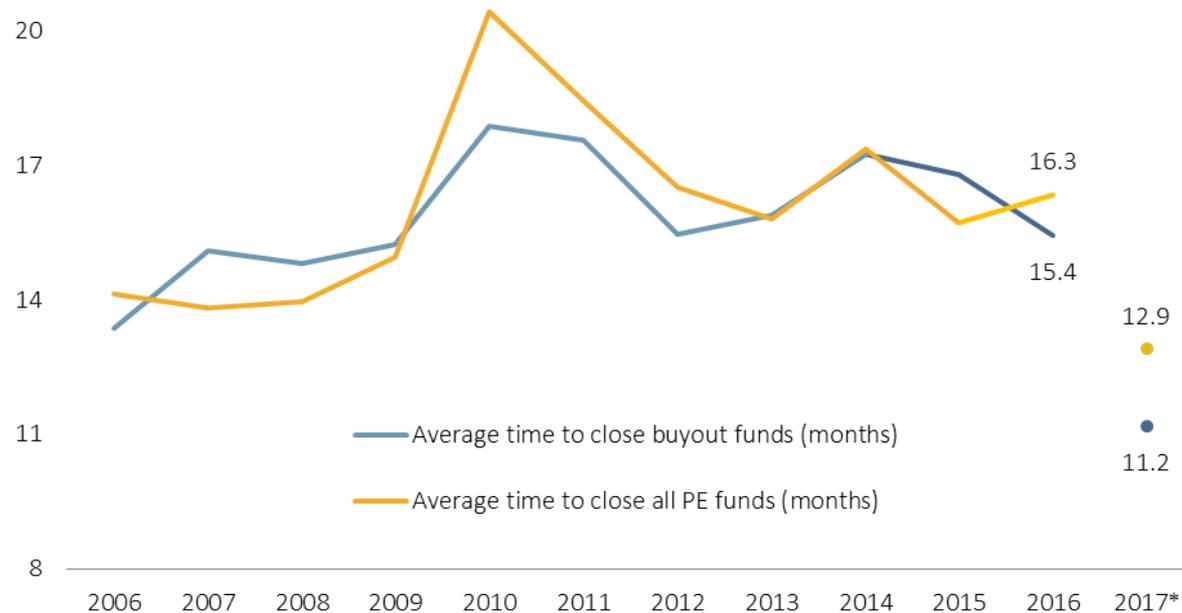
Source: Pitchbook
* As of 6/30/17



U.S. Private Equity Update - Fundraising

➤ In this strong fundraising environment, fundraising processes are moving faster than ever

- During the first three quarters of 2017 the average fundraising process ran 13 months from start to finish. This is roughly 20% faster than the already brisk pace set in 2016
 - Fundraising processes for buyout funds are moving 30% faster than last year and process duration is well below historical norms
 - As noted already, Apollo set a record in 2017 raising the largest buyout fund ever. That process took less than six months, and the capital was raised in a single close with allocation cutbacks
- The chart below presents the fund size mix for U.S. fundraising activity each year since 2010 using the Pitchbook data set



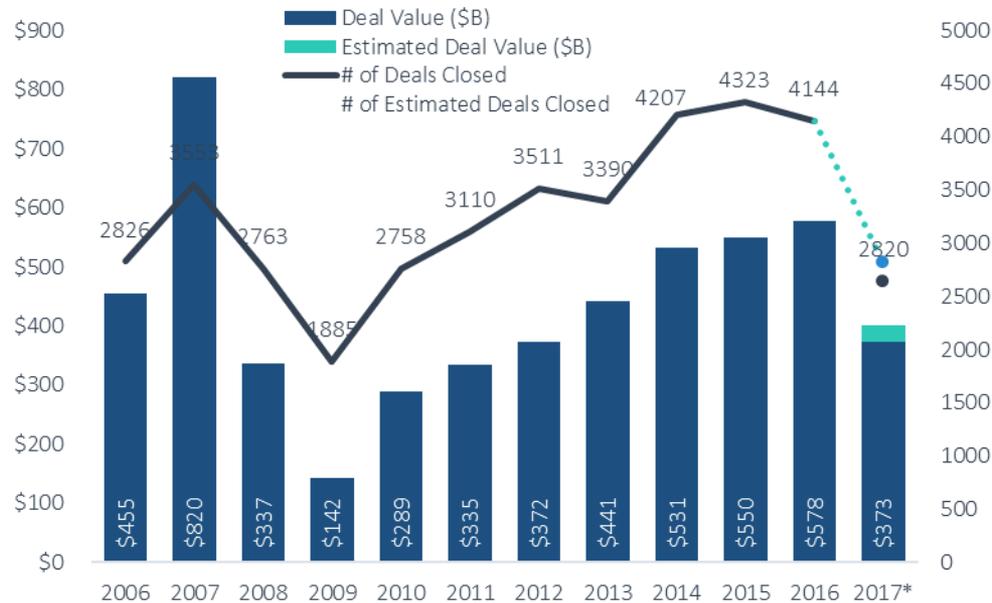
Source: Pitchbook
* As of 9/30/17



U.S. Private Equity Update - Deployment

➤ Through the first three quarters of 2017, nearly 3,000 private equity deals have been announced with a total value of \$402 billion

- Year to date investment activity in 2017 is 11% behind activity at this point in 2016
- While year to date activity trails 2016 somewhat, it appears on pace to match 2014 and 2015 making for a fourth year of solid deployment
- The chart below presents U.S. investment activity each year since 2006 using the Pitchbook data set

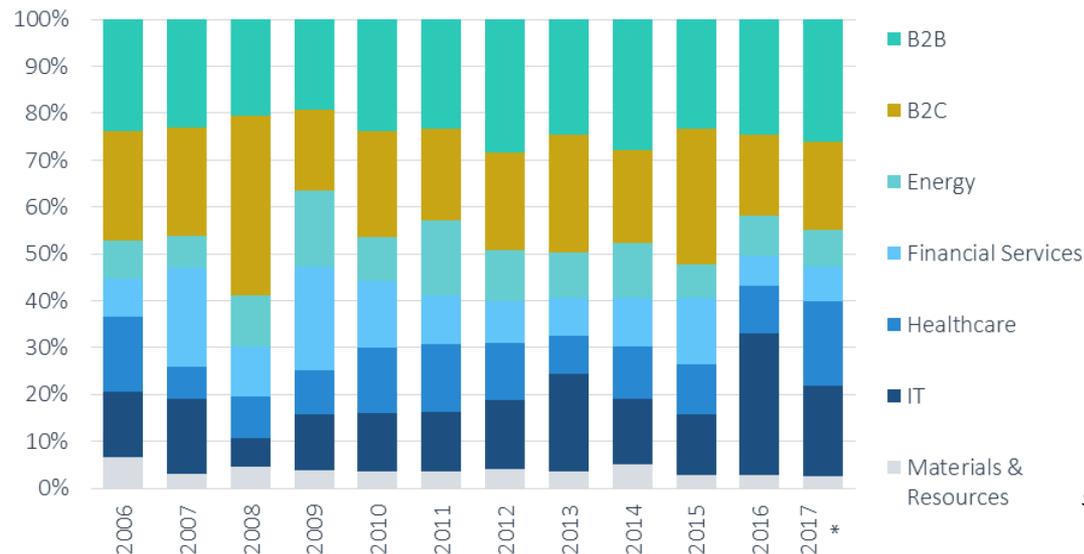


Source: Pitchbook
* As of 9/30/17



U.S. Private Equity Update - Deployment

- In recent years GPs have rotated into sector they view as being less tied to business cycles with high revenue visibility and exposure to secular growth trends
 - On a value weighted basis, 37% of year to date deal volume was in the IT (19%) and healthcare (18%) sectors. This broadly matches 2016 though the mix has shifted away from IT
 - The allocation to IT does not capture the full impact of the shift to “tech-enabled” business models across sectors (fintech, medtech, tech enabled business services, etc.)
 - The large allocation to B2B investments have also become more asset-lite over time (more business services and less industrial)
 - However, PE’s recent track record on sector rotation is not stellar when you consider the move into consumer in 2007-2008 and upstream oil & gas from 2011-2014
 - The chart below presents the sector mix (by \$) for U.S. investment activity each year since 2006 using the Pitchbook data set



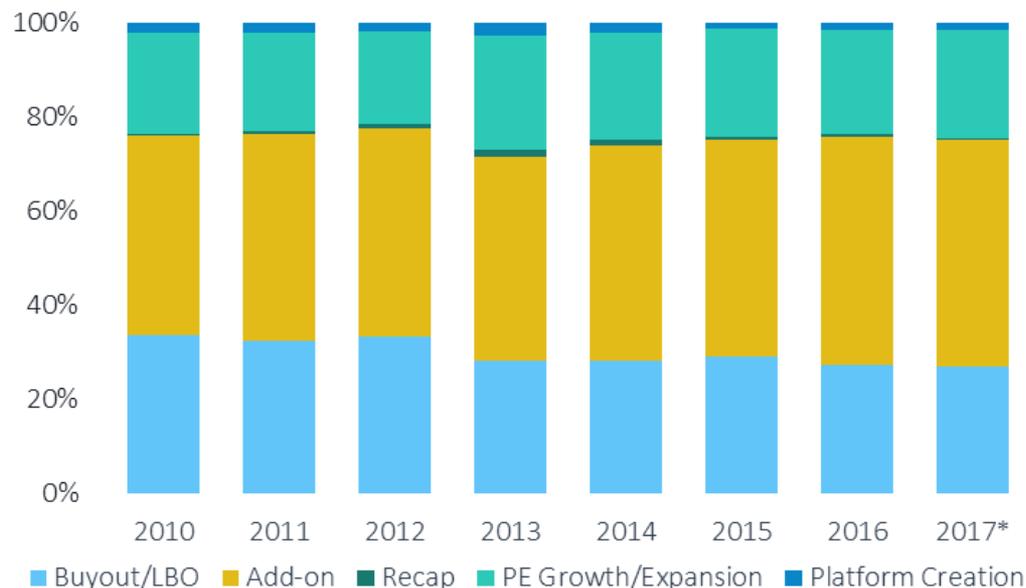
Source: Pitchbook
* As of 9/30/17



U.S. Private Equity Update - Deployment

➤ Follow-on investments account for an increasing component of U.S. PE deal activity

- Add-ons have accounted for 64% of all deals done over the past two years
 - While buy-and-build has always been an effective tool for the private equity industry, almost every GP in the market now points to add-ons as a core tenet of their strategy
 - This increased focus on follow-on investments is reflected in deal pricing which will reduce the effectiveness of the buy-and-build strategy to some degree. We should also expect some level of poor execution on the part of less seasoned managers in this area
- The chart below presents the deal type mix (by #) for U.S investment activity each year since 2010 using the Pitchbook data set

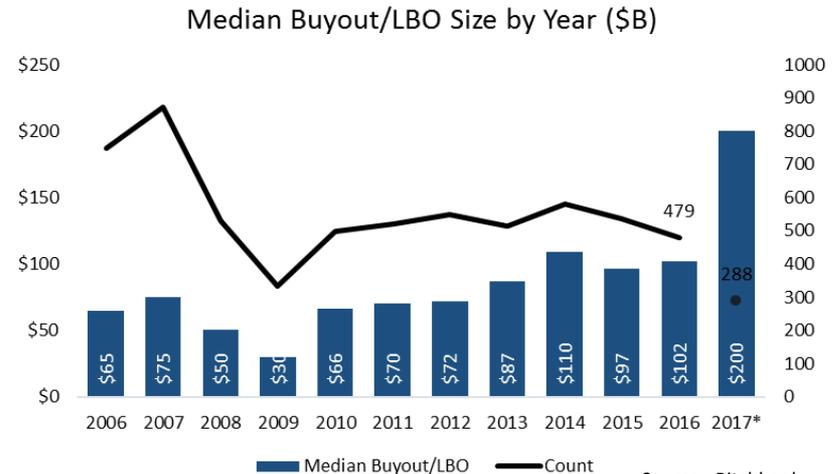
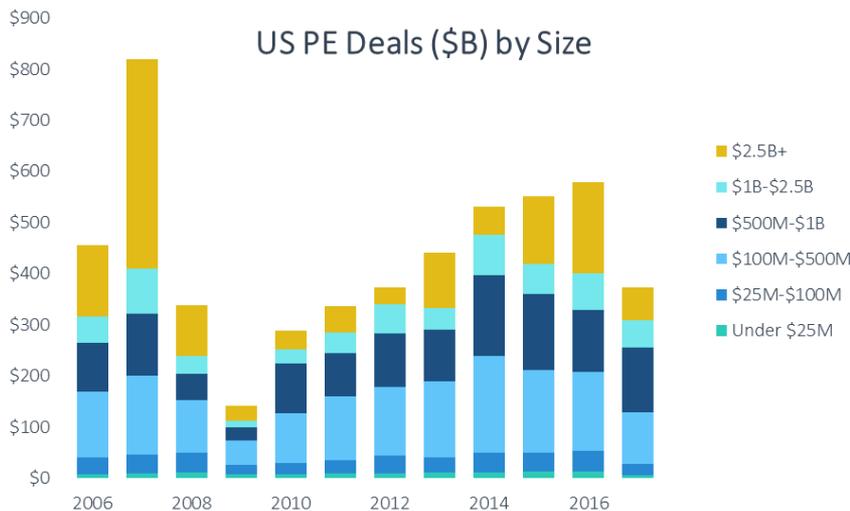


Source: Pitchbook
* As of 9/30/17

U.S. Private Equity Update - Deployment

➤ During the first three quarters of 2017, U.S. PE investment activity has skewed to middle and upper-middle market with fewer large cap deals

- The chart on the left presents allocation by deal size each year since 2006 using the Pitchbook data set
 - Year to date 2017 activity includes only 17% of capital allocated to deals with enterprise values of \$2.5 billion or more which compares to 31% in 2016 and 24% in 2015. 61% of deal volume comes from deals with enterprise values between \$500 million and \$2.5 billion which compares to 48% in 2016 and 56% in 2015
- The chart on the right presents the median size for LBOs each year since 2006 using the Pitchbook data set
 - At \$200 million, the median LBO size through the first three quarters of 2017 is well above historical norms. Coupled with the low allocation to deals with enterprise values above \$2.5 billion, this suggests a heavy concentration of activity in the middle and upper middle markets



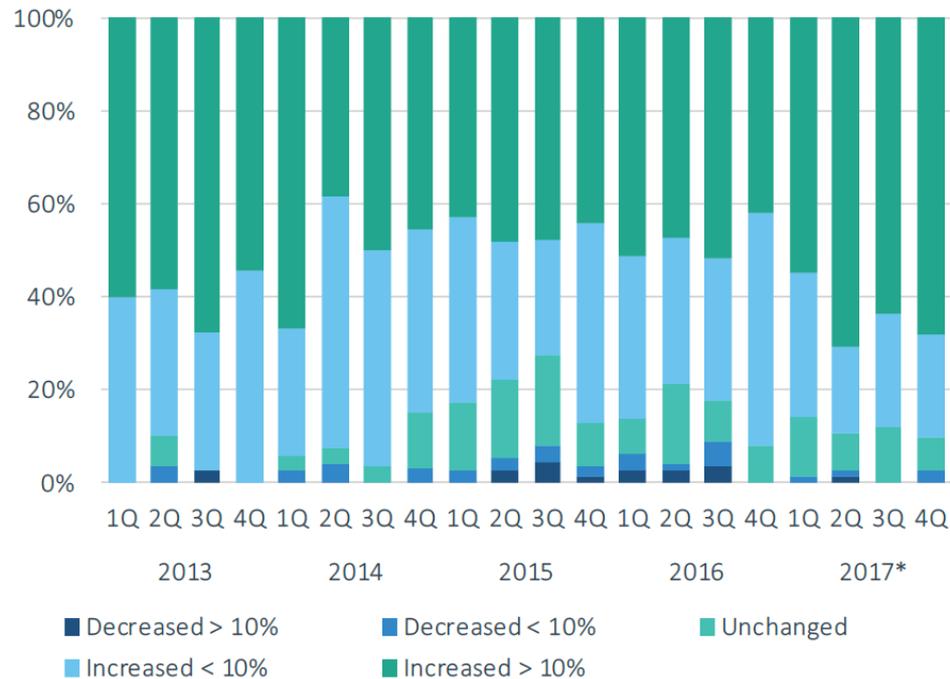
Source: Pitchbook
* As of 9/30/17

U.S. Private Equity Update - Deployment

➤ U.S. private equity sponsors are deploying capital into this high priced environment based on lofty growth projections

- The chart below presents the anticipated revenue growth over the next twelve months for new deals since 2013 based on responses to Pitchbook's quarterly survey of managers
- As the chart depicts, nearly two thirds of respondents in 2017 believe that newly acquired companies will realize double digit revenue growth in year one of the holding period

Anticipated revenue change 12 months following deal



Source: PitchBook. *As of 12/15/2017

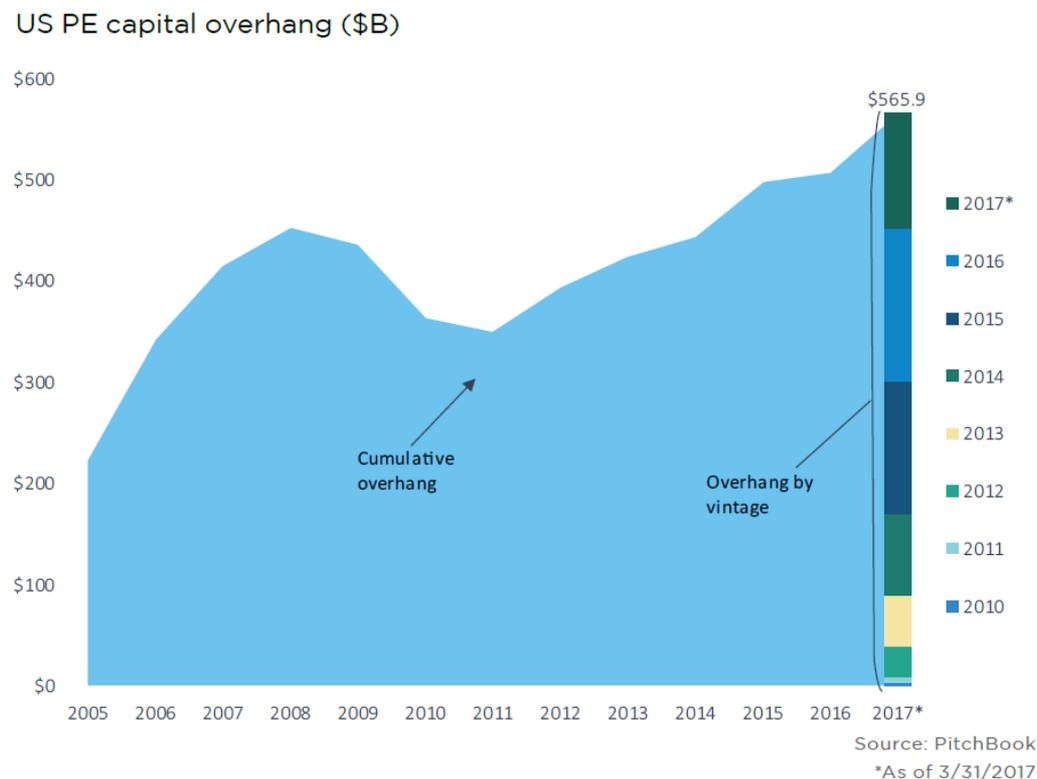
Note: Some of these quarterly figures may have n < 30



U.S. Private Equity Update - Deployment

➤ Given the scale of fundraising over the past four years it is reasonable to project high levels of deployment for years to come

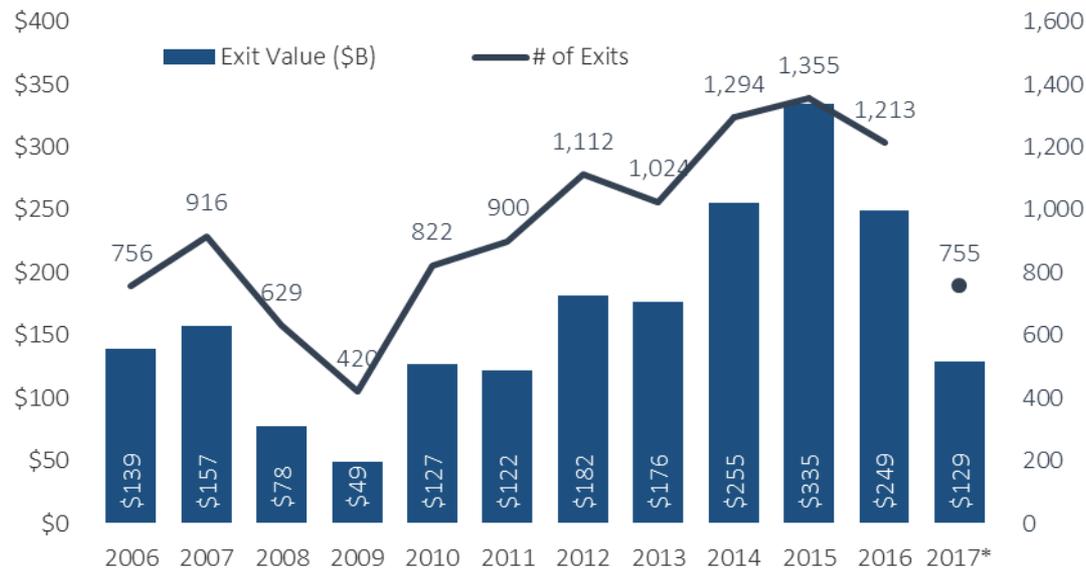
- The chart below presents U.S. dry powder since 2005 using the Pitchbook data set
- As the chart presents, as of March 31, 2017 there was \$566 billion of capital available for investment which does not include LP capital available for co-investment, co-sponsorship or direct investments



U.S. Private Equity Update - Exits

➤ Through the first three quarters of 2017, 755 U.S. private equity exits have closed with a total value of \$129 billion

- Exit activity in 2017 is the slowest it has been since 2013
- Year to date exit activity in 2017 is 33% behind activity at this point in 2016, 46% behind the 2015 pace and 30% behind the 2014 pace
- The chart below presents U.S. exit activity each year since 2006 using the Pitchbook data set

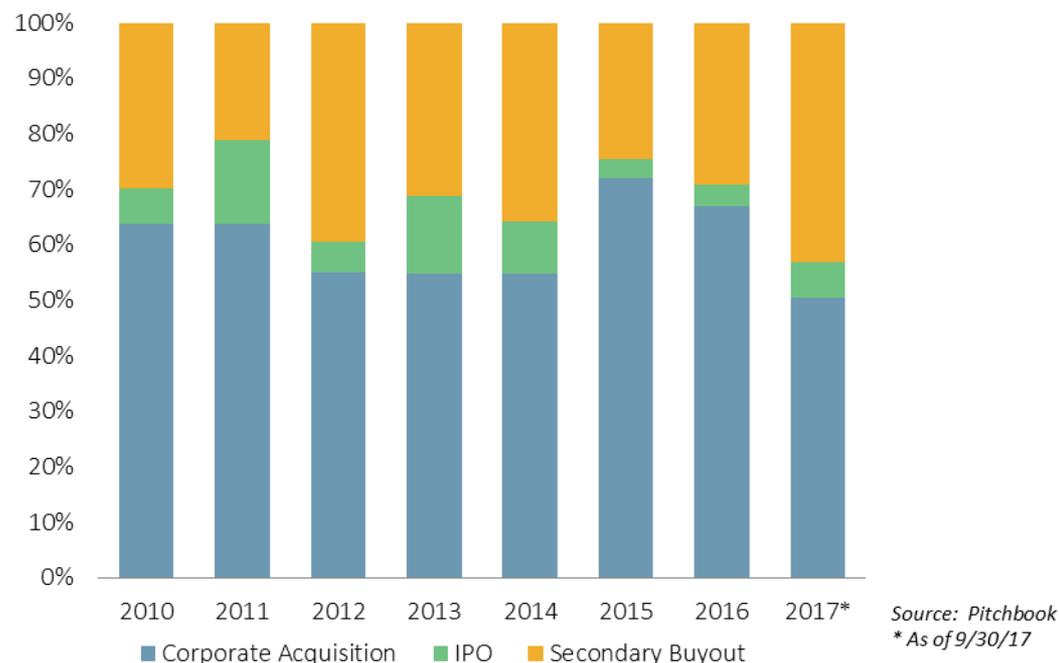


Source: Pitchbook
* As of 9/30/17

U.S. Private Equity Update - Exits

➤ As exit activity decreases overall, secondary buyouts have accounted for a larger portion U.S. PE exits in 2017

- Secondary buyouts accounted for 43% of exit value through the first three quarters of 2017. This compares to 29% in 2016 and 25% in 2015
- The pace of secondary buyout activity during the first three quarters of 2017 was effectively flat versus the same period in 2016 whereas corporate acquisition activity was down 52%
- The chart below presents the mix of exits by type each year since 2010 using the Pitchbook data set



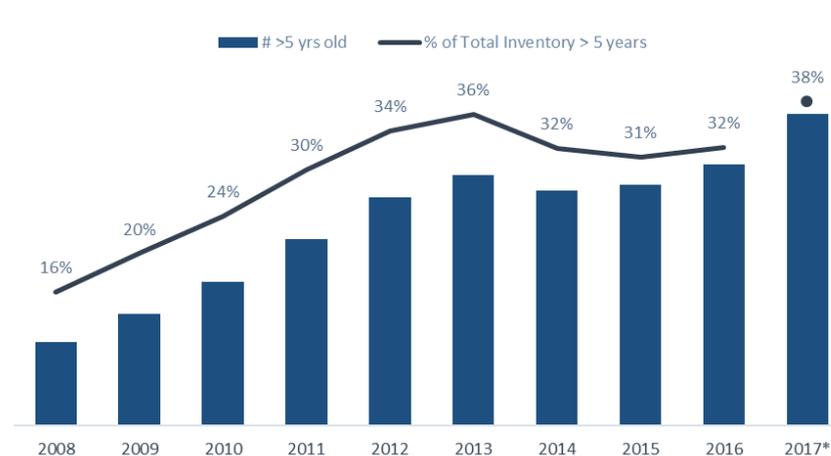
U.S. Private Equity Update - Exits

➤ With both new deal activity and exits off last year's pace, the U.S. private equity industry continues to acquire roughly twice as many companies as it sells

- The chart on the left presents the ratio of new investments to exits each year since 2006 using the Pitchbook data set
- As the chart presents, the U.S. PE industry's investment/exit ratio has been reasonably consistent since 2010

➤ As exit volumes return to 2013 levels, the age of the U.S. PE portfolio is on the rise

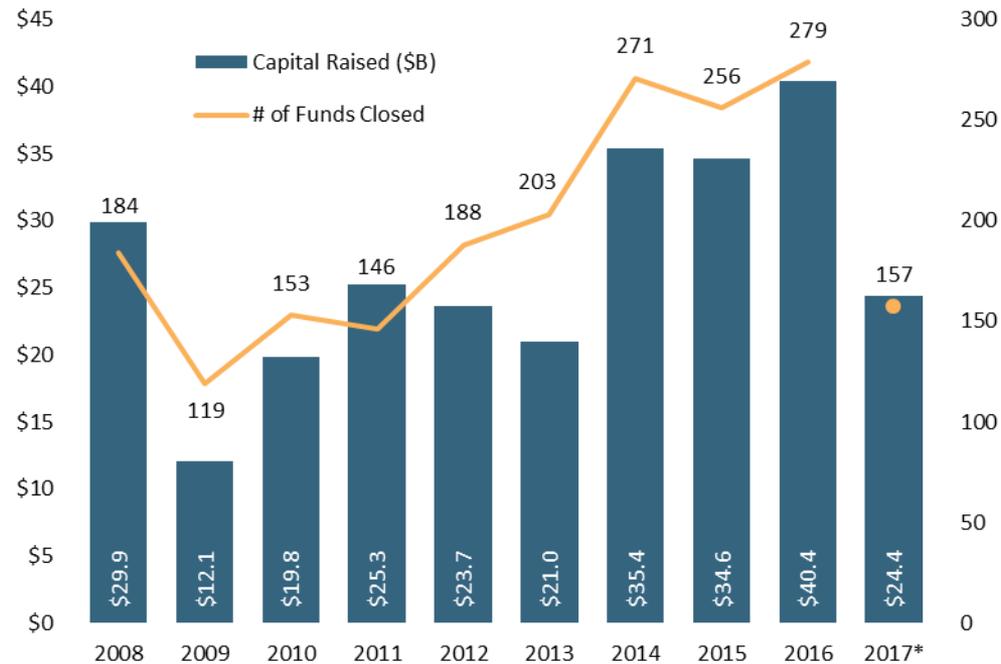
- The chart on the right presents the percentage of U.S. PE-backed portfolio companies that have been held for five years or more since 2008 using the Pitchbook data set
- As the chart presents, the percentage of old inventory has moved back up to peak levels as exits have slowed from the 2014-2016 pace
- As a general rule, deals held beyond their five-year anniversary will appreciate in value at a lower rate than deals that are in the target holding period years



U.S. Venture Capital Update - Fundraising

➤ Through the first three quarters of 2017, \$24 billion had been raised across 157 U.S. venture capital funds

- With respect to the amount of capital raised, year to date fundraising is 20% behind pace relative to 2016 but broadly on pace with 2015 and 2016
- Year to date, the median and average venture capital fund raised in the U.S. had \$60 million and \$156 million of committed capital, respectively
- The chart below presents U.S fundraising activity each year since 2008 using the Pitchbook data set



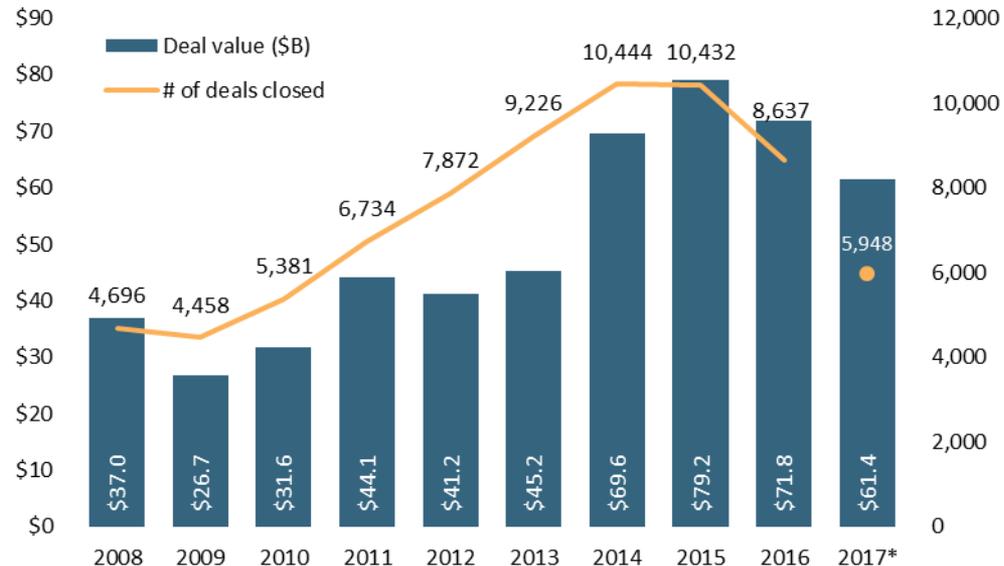
Source: Pitchbook
* As of 9/30/17



U.S. Venture Capital Update - Deployment

➤ Through the first three quarters of 2017, nearly 6,000 venture capital rounds have been funded with a total value of \$61 billion

- Year to date investment activity in 2017 is effectively on pace with activity during the same period in 2015 and 2016
- In 2017, median pre-money valuations have increased 10% for series A and B rounds and 7% for series C rounds
- The chart below presents U.S investment activity each year since 2008 using the Pitchbook data set

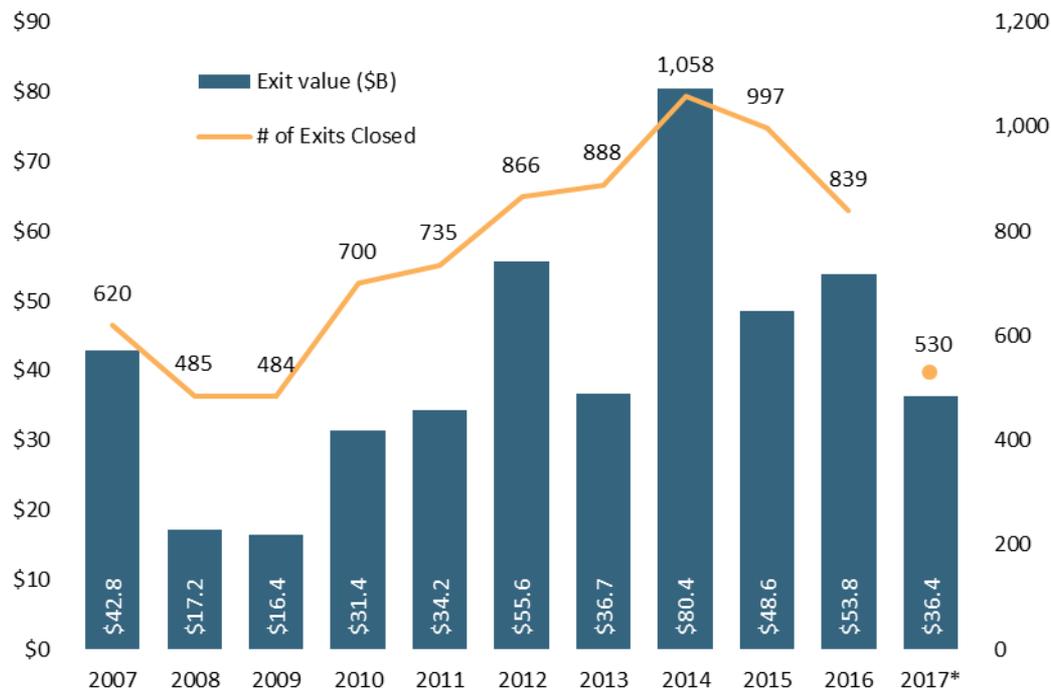


Source: Pitchbook
* As of 9/30/17

U.S. Venture Capital Update - Exits

➤ Through the first three quarters of 2017, 530 U.S. venture capital exits have closed with a total value of \$36 billion

- Exit activity in 2017 is broadly in line with 2015 and 2016
- The median and average time from financing to exit increased to 5.1 years and 6.2 years, respectively in 2017 after having been as low as 4.3 years and 5.0 years, respectively in 2011
- The chart below presents U.S. exit activity each year since 2007 using the Pitchbook data set

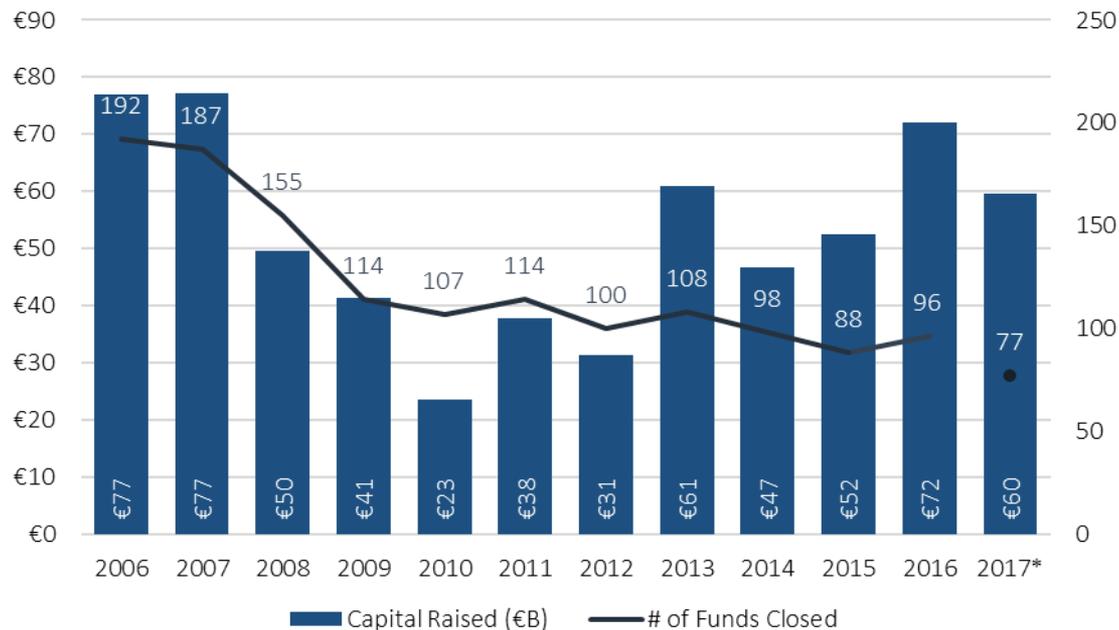


Source: Pitchbook
* As of 9/30/17

Europe Private Equity Update - Fundraising

➤ Through the first three quarters of 2017, €60 billion had been raised across 77 European private equity funds

- With respect to the amount of capital raised, year to date fundraising is 10% ahead of the healthy pace set in 2016
- As in the U.S., Europe saw its largest fundraise ever in 2017 with the formation of CVC Fund VII (€16 billion)
- The chart below presents European fundraising activity each year since 2006 using the Pitchbook data set



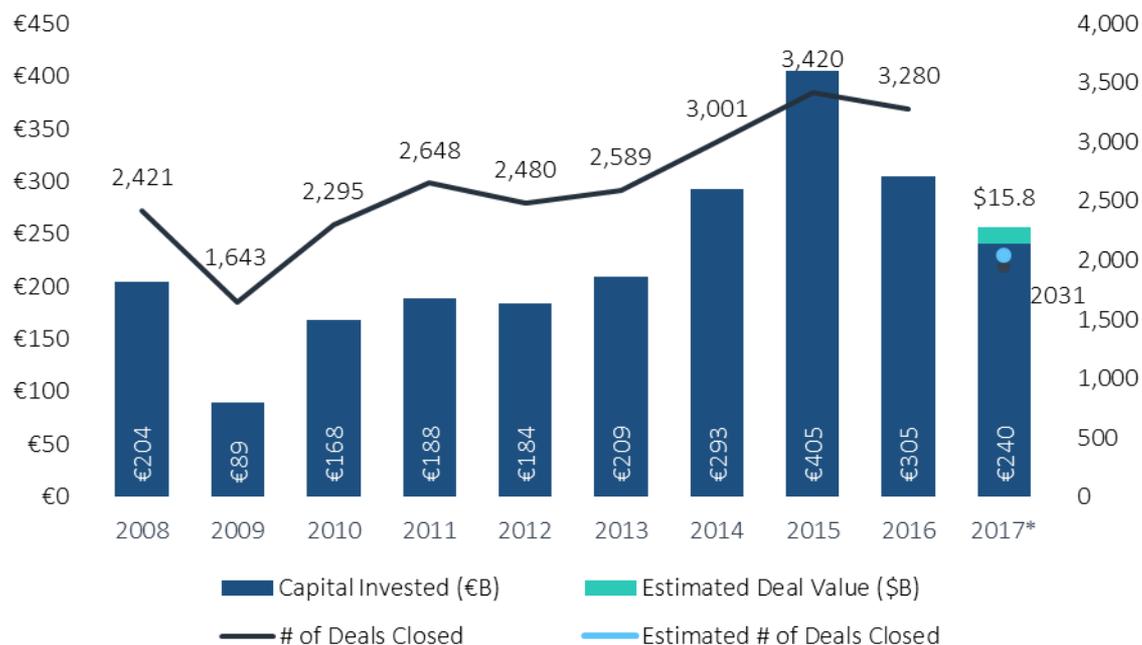
Source: Pitchbook
* As of 9/30/17



Europe Private Equity Update - Deployment

➤ Through the first three quarters of 2017, more than 2,000 private equity deals have been announced with a total value of €256 billion

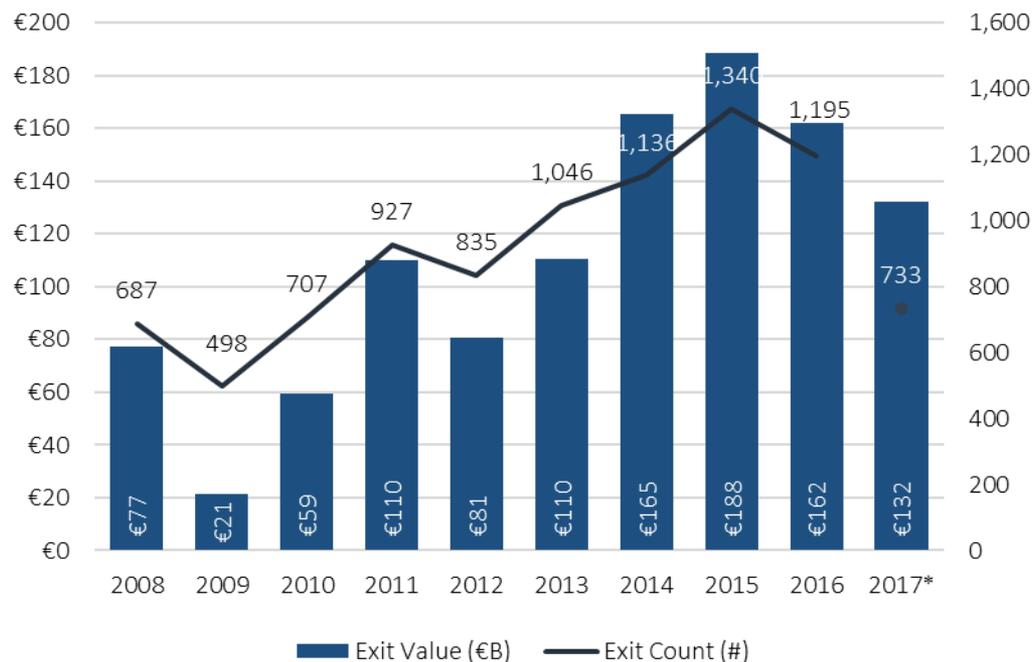
- Year to date investment activity is 12% ahead of the pace set in 2016 but remains 16% behind the record 2015 pace
- Large transactions have come back strongly with enterprise values of €2.5 billion or more representing 27% of volume in 2017. This compares to 9% in 2016
- B2B remains the dominant sector in Europe representing 36% of overall activity by value
- The chart below presents European investment activity each year since 2008 using the Pitchbook data set



Source: Pitchbook
* As of 9/30/17

Europe Private Equity Update - Exits

- Through the first three quarters of 2017, 733 private equity exits have closed with a total value of €132 billion
 - Year to date exit activity in 2017 is 9% ahead of the 2016 pace
 - Exits have been strong since 2014
 - The chart below presents European exit activity each year since 2008 using the Pitchbook data set



Source: Pitchbook
* As of 9/30/17

General Industry Update

➤ **General Partner Stake Sales**

- The sale of GP stakes is a trend that has gained momentum in recent years. Pitchbook tracks 64 Alternative Investment GP stake transactions since the start of 2016 with more than half involving private equity firms
- 2017 saw notable GP stake sales at ArLight, Accel KKR, Energy Capital Partners, Leonard Green & Co., The Riverside Company, Riverstone, TSG Consumer Partners, TSSP, etc.
- Demand is strong with at least a dozen discrete pools of capital already formed to invest in GP stakes with further fund launches expected. LPs are also increasingly pursuing GP stakes on a direct basis
- In general, these transactions hurt alignment

➤ **Subscription Lines**

- GPs are increasingly relying on credit facilities to delay and aggregate capital calls. 2017 saw this practice further proliferate, and in new partnership formations GPs are seeking increased borrowing capacity and the ability to borrow for longer periods of time
- Subscription lines have evolved from a legitimate cash flow management tool into fund-level leverage facilities amplifying valuation volatility and complexity
- Increased usage will force LPs to fundamentally reconsider how exposures are captured, pacing is modelled, track records are analyzed and partnership waterfalls are structured, and at some stage there will definitely be a default leading to a complex fund restructuring

➤ **Terms**

- In a fundraising environment characterized by strong excess demand on the part of LPs, GPs continue to have significant leverage in legal negotiations
- GPs continue to pursue additional flexibility and protections in LPA negotiations, but headline economic terms remain largely unchanged
- On the advice of fund counsel, GPs are consistently asking for material redrafting of side letters despite limited flexibility on the part of many LPs, which has the effect of driving up fund formation costs
- LPs continues to make gains on transparency and disclosure

➤ **U.S. Tax Reform**

- It will take time to fully ascertain the impact of U.S. tax reform on the private equity business
- On existing investments, we should anticipate a balanced impact overall with case specific winners and losers
 - Highly levered existing investments will obviously see an impact from a reduced capacity to deduct interest expense, but it certainly helps that this change is being implemented in a period where borrowing costs are at an all time low
 - More modestly levered investments will see this impact offset to differing degrees by a reduced corporate tax rate
- On new investments, the U.S. leveraged buyout business will need to adjust, but comparable tax schemes exist in other jurisdictions across Europe where buyout managers are able to execute the strategy
 - The reduced ability to deduct interest expense will decrease the benefit of leverage accelerating private equity's evolution away from financial engineering toward operational intervention. Reduced corporate tax rates should allow for increased reinvestment in value creation initiatives
 - Curtailed interest deductibility will reduce the incentive to do dividend recaps which, on balance, have been positive for private equity returns

TAB 8 – Asset Allocation & NAV Updates

Asset Allocations at November 30, 2017

Regular Account							Variable Fund	Total Fund	
OPERF	Policy	Target ¹	\$ Thousands	Pre-Overlay	Overlay	Net Position	Actual	\$ Thousands	\$ Thousands
Public Equity	32.5-42.5%	37.5%	32,012,494	41.7%	(928,337)	31,084,157	40.5%	607,153	31,691,310
Private Equity	13.5-21.5%	17.5%	14,933,413	19.4%		14,933,413	19.4%		14,933,413
Total Equity	50.0-60.0%	55.0%	46,945,907	61.1%	(928,337)	46,017,570	59.9%		46,624,722
Opportunity Portfolio	0-3%	0.0%	1,592,074	2.1%		1,592,074	2.1%		1,592,074
Fixed Income	15-25%	20.0%	14,140,798	18.4%	2,901,925	17,042,723	22.2%		17,042,723
Real Estate	9.5-15.5%	12.5%	7,605,434	9.9%	(5,000)	7,600,434	9.9%		7,600,434
Alternative Investments	0-12.5%	12.5%	4,516,239	5.9%		4,516,239	5.9%		4,516,239
Cash²	0-3%	0.0%	1,981,424	2.6%	(1,968,588)	12,836	0.0%		15,262
TOTAL OPERF		100%	\$ 76,781,875	100.0%	\$ -	\$ 76,781,875	100.0%		\$ 609,579

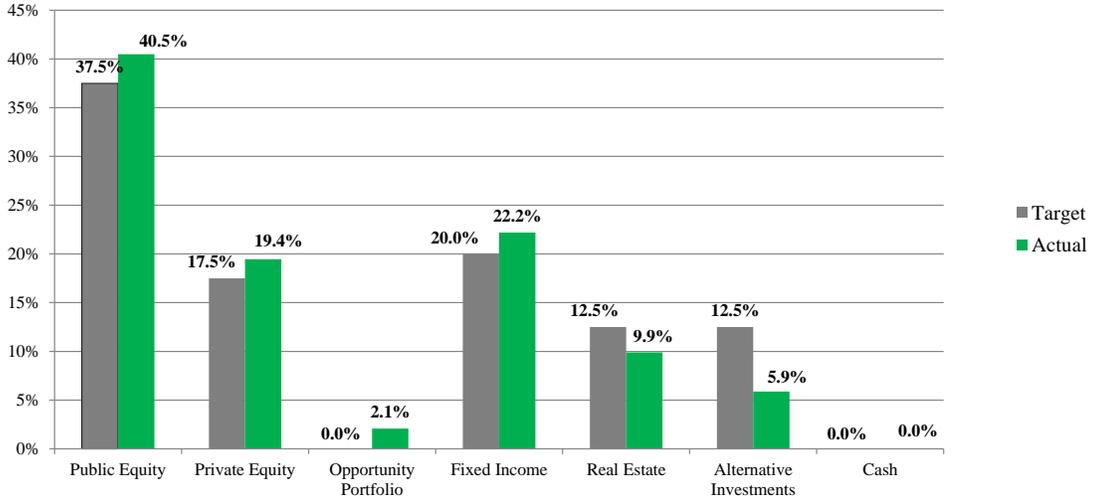
¹Targets established in June 2015. Interim policy benchmark consists of: 40% MSCI ACWI IMI Net, 22.5% Custom FI Benchmark, 20% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF ODCE net (1 quarter lagged), & 5% CPI+400bps.

²Includes cash held in the policy implementation overlay program.

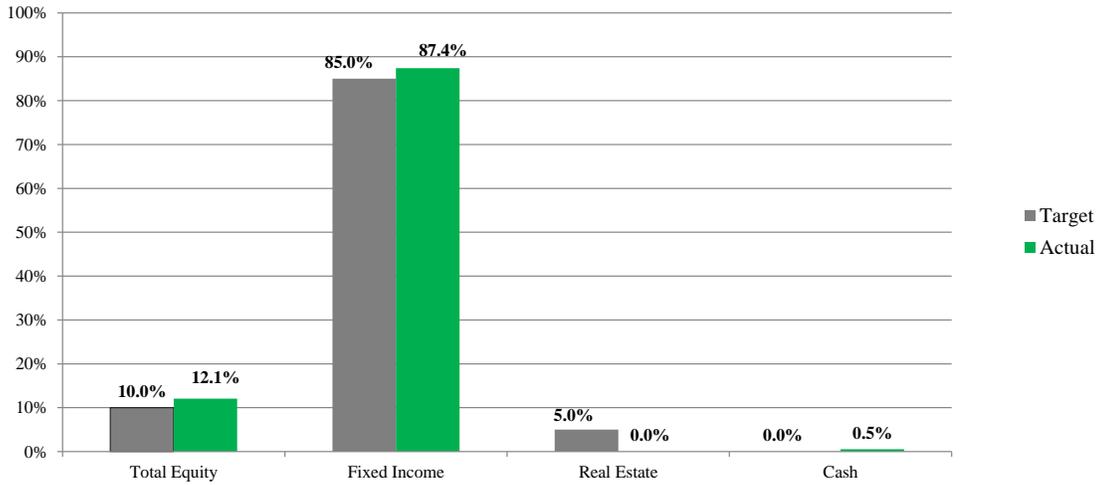
SAIF	Policy	Target	\$ Thousands	Actual
Total Equity	7-13%	10.0%	579,748	12.1%
Fixed Income	80-90%	85.0%	4,203,297	87.4%
Real Estate	0-7%	5.0%	0	0.0%
Cash	0-3%	0%	25,148	0.5%
TOTAL SAIF			\$ 4,808,193	100.0%

CSF	Policy	Target	\$ Thousands	Actual
Domestic Equities	25-35%	30%	501,455	29.7%
International Equities	25-35%	30%	483,786	28.6%
Private Equity	0-12%	10%	206,713	12.2%
Total Equity	65-75%	70%	1,191,954	70.5%
Fixed Income	25-35%	30%	445,969	26.4%
Cash	0-3%	0%	52,415	3.1%
TOTAL CSF			\$ 1,690,339	100.0%

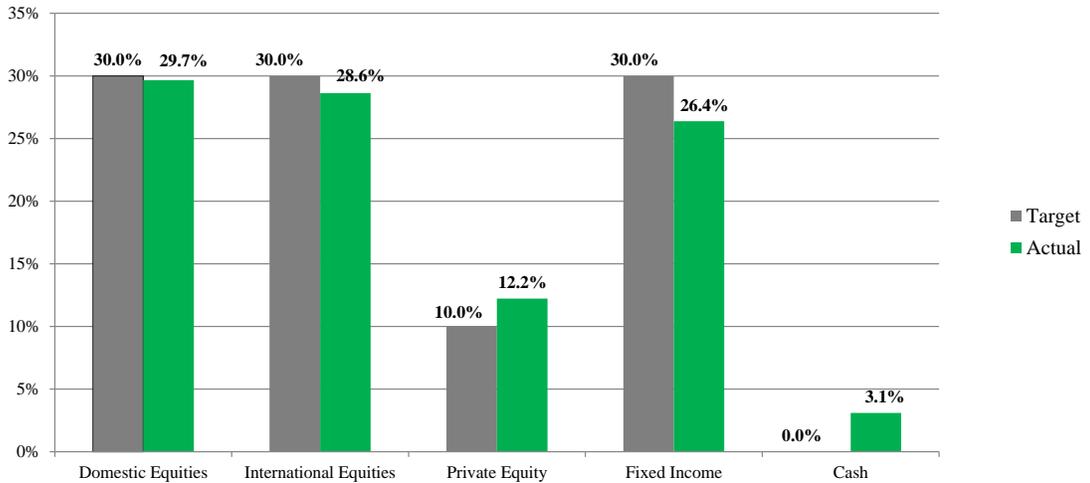
OPERF Asset Allocation



SAIF Asset Allocation



CSF Asset Allocation

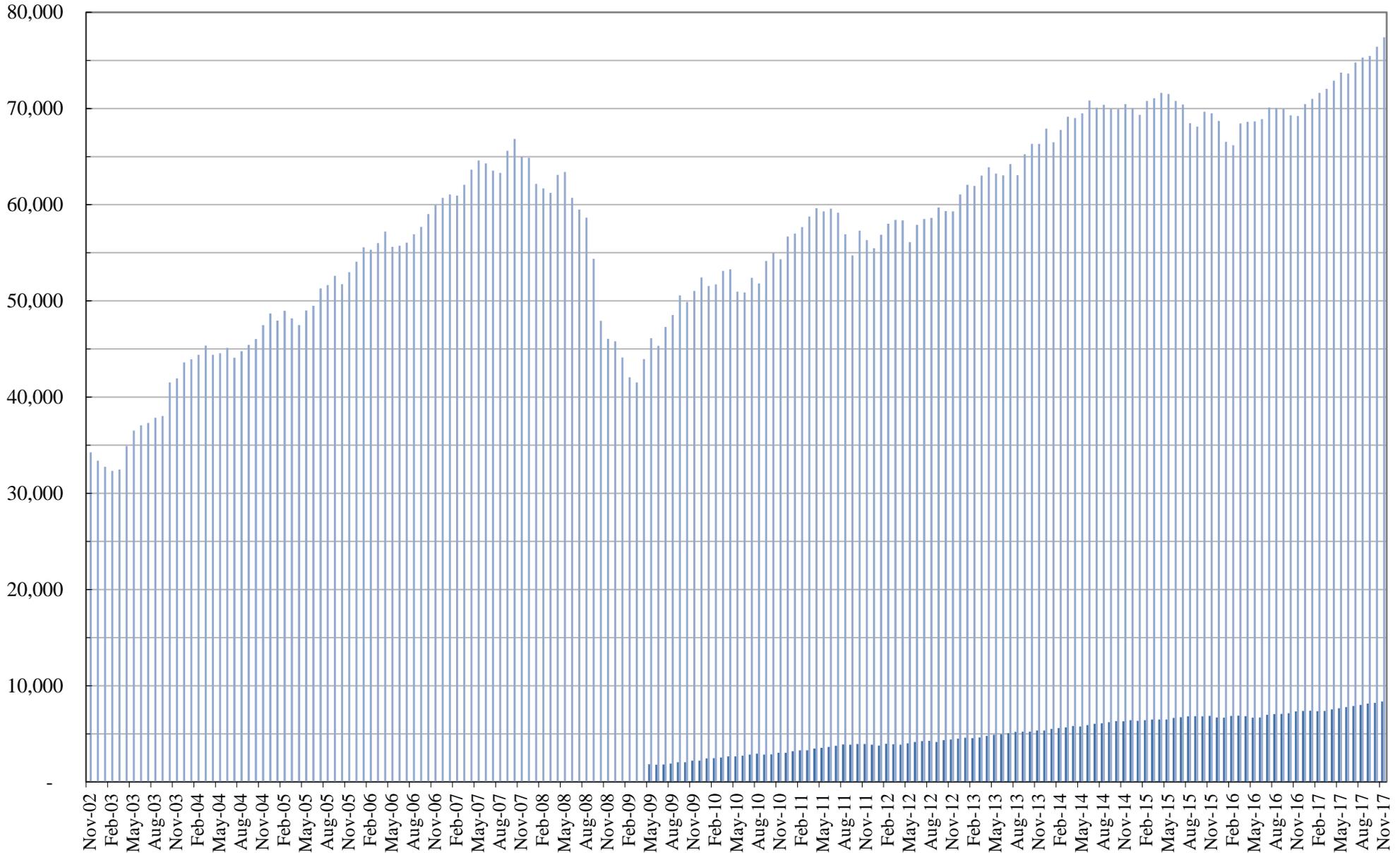


OPERF NAV

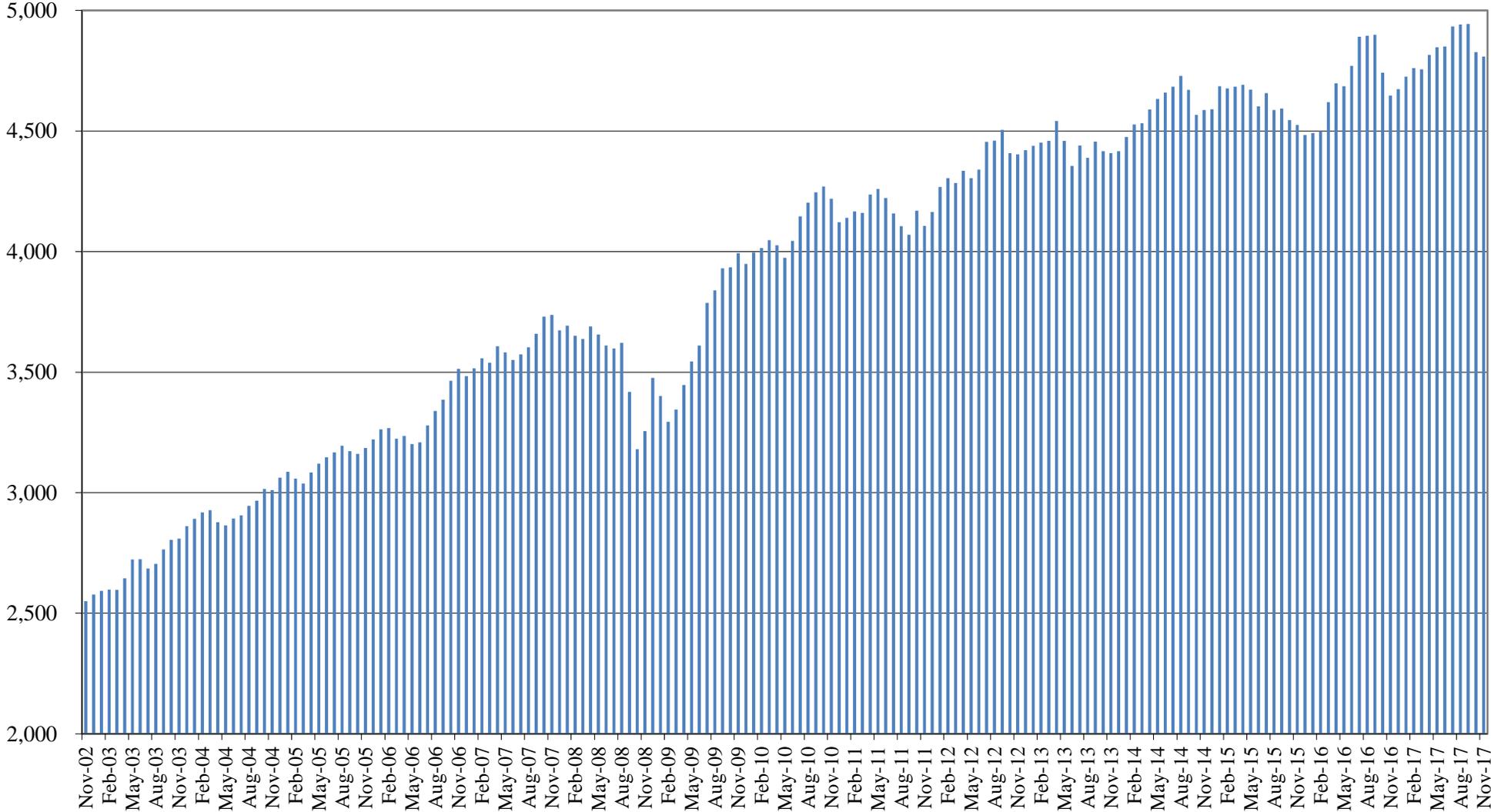
15 years ending November 2017

(\$ in Millions)

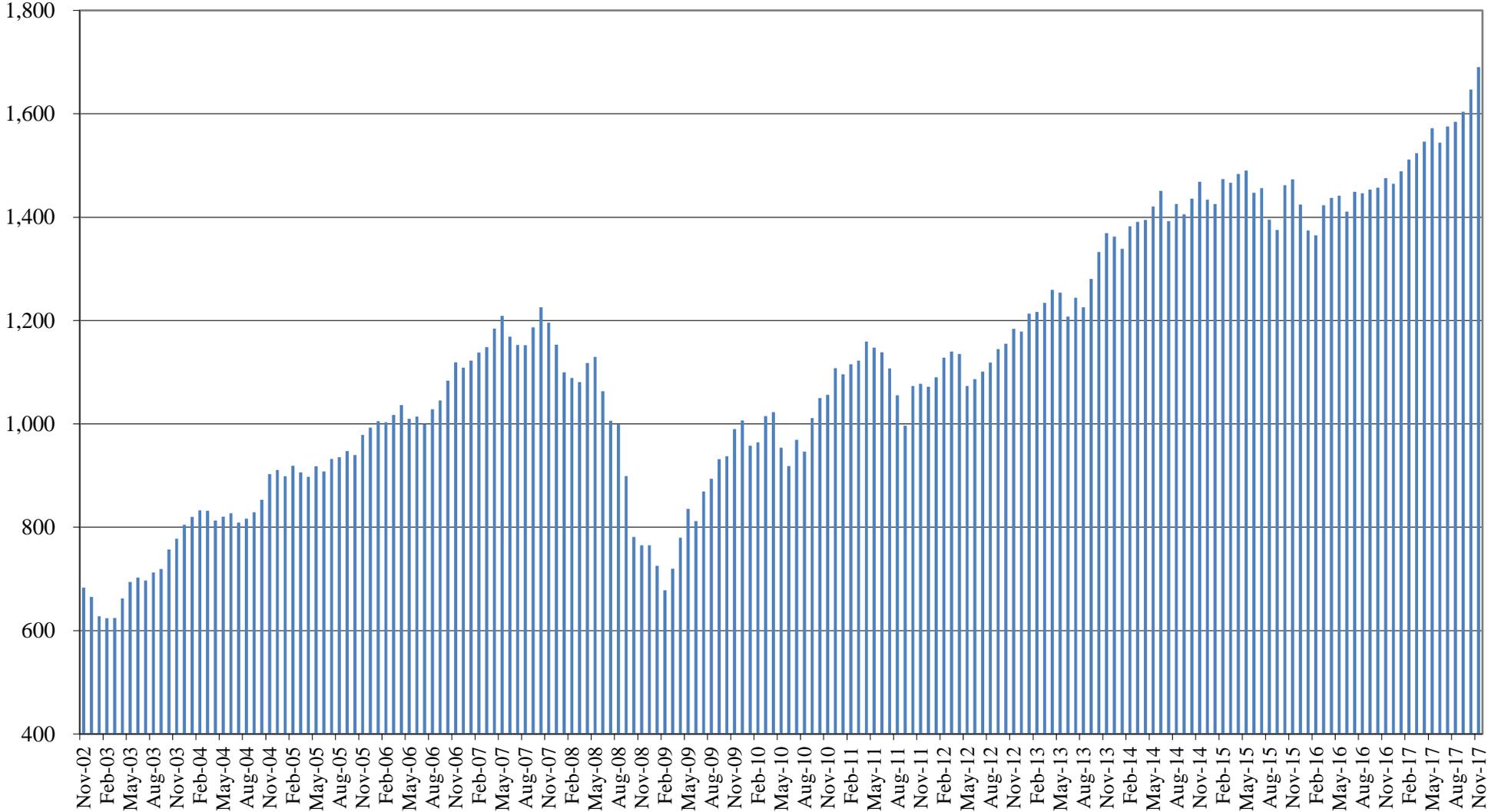
IAP OPERF



SAIF NAV
15 years ending November 2017
(\$ in Millions)



CSF NAV
15 years ending November 2017
(\$ in Millions)



TAB 9 – Calendar — Future Agenda Items

2018 OIC Forward Calendar and Planned Agenda Topics

March 14, 2018:	OPERF Overlay Review Securities Lending Update Real Estate Program Review Q4 2017 OPERF Performance & Risk Report
April 25, 2018:	OPERF Asset Allocation & Capital Market Assumptions Update Private Equity Manager Presentation Alternatives Portfolio Review OIC Policy Updates SAIF Annual Review
April 27, 2018	Strategic Issues Discussion ¹
June 6, 2018	Private Equity Manager Presentation Opportunity Portfolio Review Q1 OPERF Performance & Risk Report Operations Update CSF Annual Review
August 8, 2018:	Private Equity Manager Presentation Corporate Governance Update OIC Policy Updates
September 19, 2018:	Q2 OPERF Performance & Risk Report CEM Benchmarking Report
October 31, 2018:	Currency Program Review Public Equity Program Review
December 12, 2018:	Q3 OPERF Performance & Risk Report Fixed Income Program Review (OPERF, OSTF & OITP)

¹ Start time for the April 27 meeting is 1pm PT, all other meetings start at 9am PT.