

Pennsylvania Public Pension Management and Asset Investment Review Commission (PPMAIRC)

Preliminary Analysis – Fees, Costs, Asset Allocation, Performance

Second Hearing, September 20th, 2018

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Harrisburg, PA

PPMAIRC Second Hearing

Asset Allocation and Performance Preliminary Analysis

(Data obtained from Public Pensions Database – Center for Retirement Research)

Background & Scope

Challenges: Conducting peer analysis on performance and strategy is difficult because of the idiosyncrasies amongst plans.

Peer Group Selection: Funds for the Peer Group were selected against three main criteria elements:

- **Size:** funds with assets comparable to SERS and PSERS
- **Discount Rate:** funds with similar discount rate to SERS/PSERS
- **Asset Allocation:** funds with similar asset allocations comparable to SERS/PSERS

Time Range: Data was collected for fiscal years 2008-2017 (i.e. for the years ending June 30th 2008 and June 30th 2017).

Key Areas of Analysis: Initial analysis was scoped to cover asset allocation and investment performance for each fund in the peer group across the 10-year time horizon.

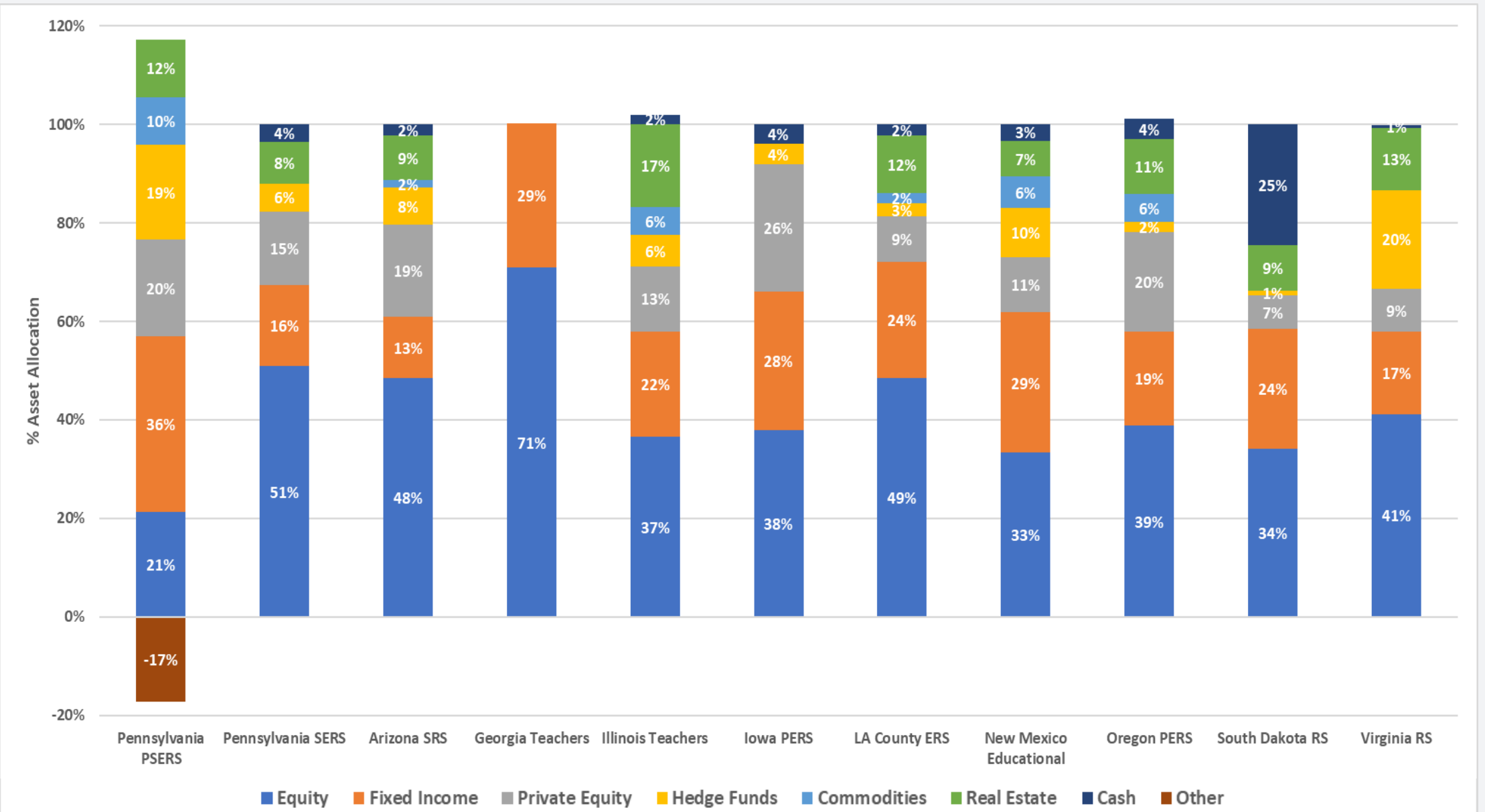
- Asset allocation variations over the period
- Benchmark Performance (as recorded in Annual Reports)
- Annualized investment returns at the fund and asset class level against benchmarks.

Peer Group FY17

Plan	Net Assets FY17 (000s)	FY17 Discount Rate	Funded Ratio	Fiscal Year End Date
Georgia Teachers	\$71,340,972	7.50%	74%	June 30th
Virginia RS	\$70,159,680	7.00%	77%	June 30th
Oregon PERS	\$66,371,703	7.20%	75%	June 30th
Pennsylvania PSERS	\$53,155,336	7.25%	56%	June 30th
LA County ERS	\$52,225,457	7.38%	80%	June 30th
Illinois Teachers	\$49,375,665	7.50%	40%	June 30th
Arizona SRS	\$36,202,756	7.50%	71%	June 30th
Iowa PERS	\$30,779,116	7.00%	81%	June 30th
Pennsylvania SERS	\$27,934,000	7.25%	59%	December 31st
New Mexico Educational	\$12,509,356	7.25%	63%	June 30th
South Dakota RS	\$11,644,039	6.50%	100%	June 30th

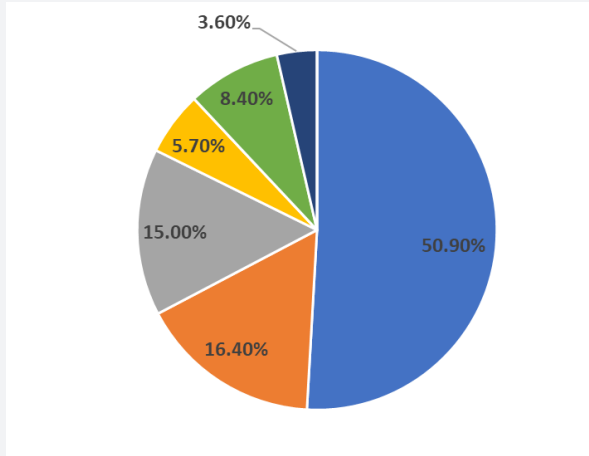
Source; Public Plans Database; Q2 FY17 Data included for Penn SERS to control for different fiscal year end date, sourced from investment report provided by SERS

2017 Asset Allocation | Peer Group

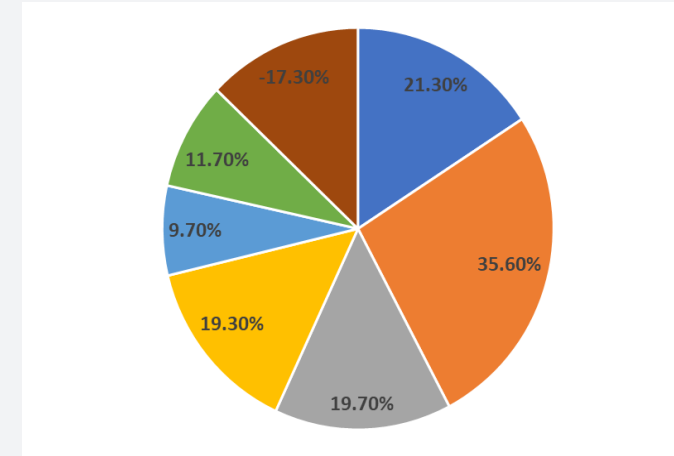


2017 Asset Allocation | Peer Group

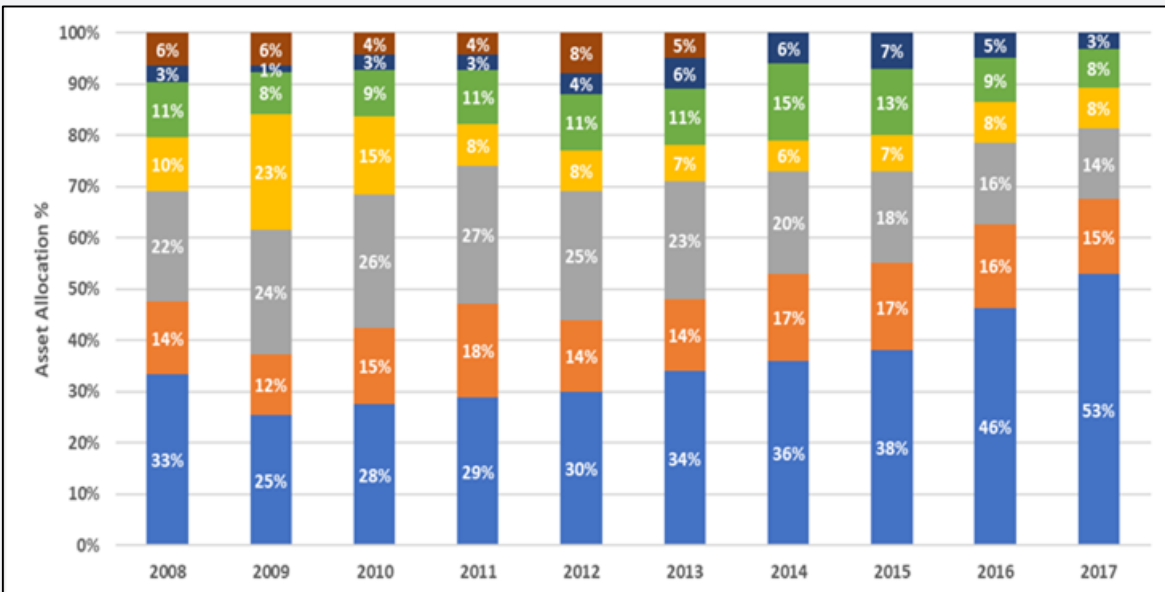
SERS 2017 Asset Allocation



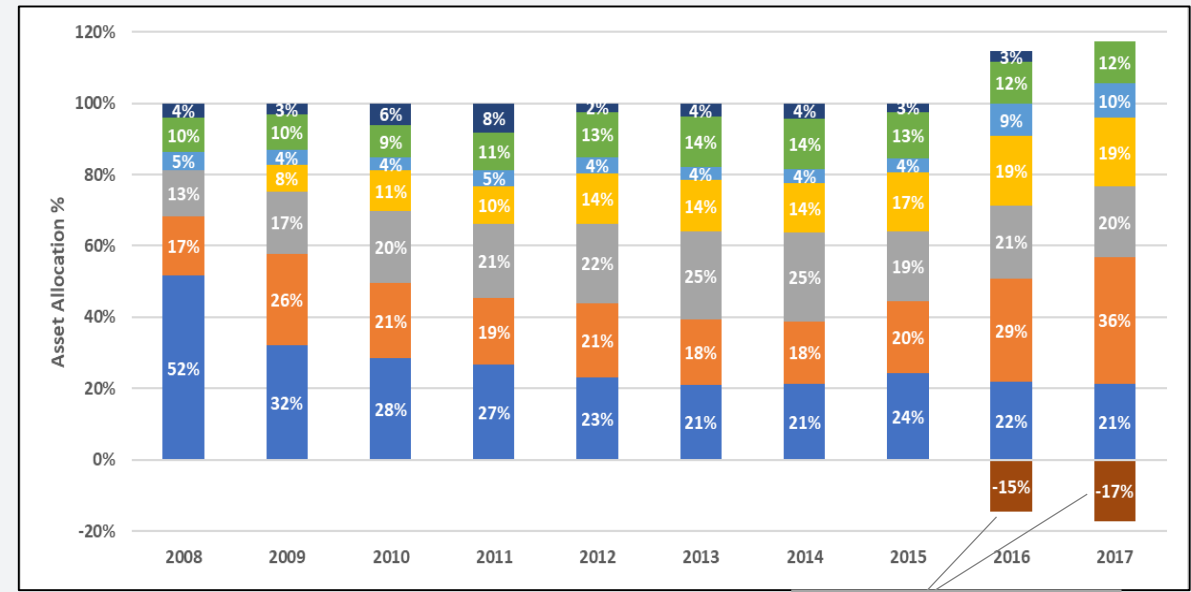
PSERS 2017 Asset Allocation



SERS 2008-2017 Asset Allocation



PSERS 2008-2017 Asset Allocation

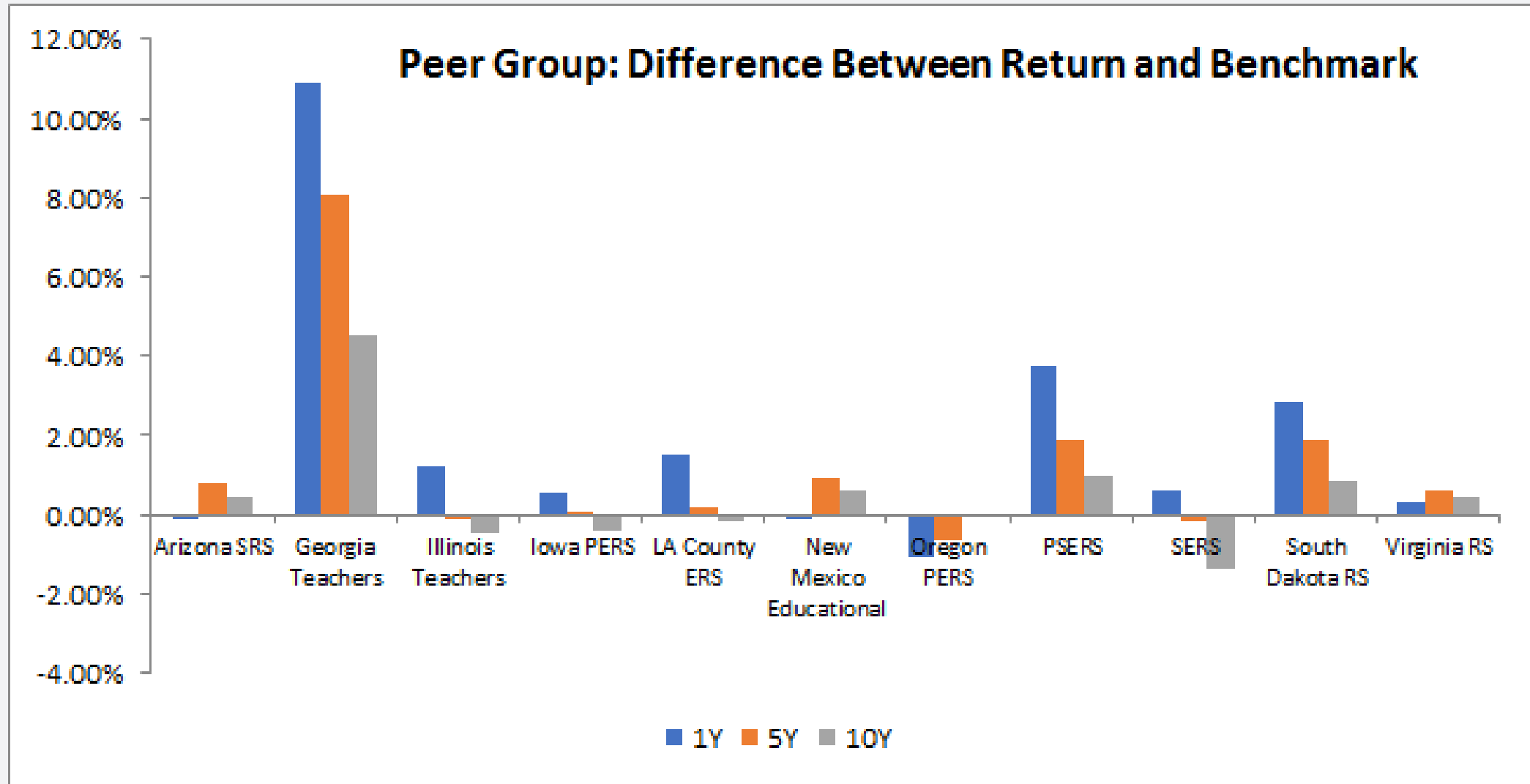


Leverage Financing

2017 Benchmark Performance | Total Portfolio

Peers	FY17 Discount Rate	2017 Benchmark Performance			
		Total Portfolio 1Y	Total Portfolio 3Y	Total Portfolio 5Y	Total Portfolio 10Y
Arizona SRS	7.50%	14.00%	4.80%	8.80%	5.20%
Georgia Teachers	7.50%	1.60%	0.90%	1.30%	1.60%
Illinois Teachers	7.50%	11.40%	6.10%	9.30%	5.30%
Iowa PERS	7.00%	11.17%	5.79%	8.61%	6.28%
LA County ERS	7.38%	11.20%	5.90%	8.80%	5.40%
Oregon PERS	7.20%	13.02%	6.59%	9.85%	N/A
Pennsylvania PSERS	7.25%	6.39%	3.49%	5.47%	2.80%
Pennsylvania SERS	7.25%	11.70%	5.10%	8.10%	5.30%
South Dakota RS	6.50%	10.96%	5.24%	9.07%	5.31%
Virginia RS	7.00%	11.80%	5.70%	8.50%	4.50%
New Mexico Educational	7.25%	12.10%	5.40%	7.80%	4.60%
Peer Group Average		10.49%	5.00%	7.78%	4.63%

2017 Absolute Performance | Peer Group



2017 Absolute Performance | Peer Group

Plan (2017)	Category	Total Portfolio		
		1Y	5Y	10Y
Arizona SRS	Return	13.90%	9.60%	5.60%
Georgia Teachers	Return	12.50%	9.40%	6.10%
Illinois Teachers	Return	12.60%	9.20%	4.80%
Iowa PERS	Return	11.70%	8.65%	5.89%
LA County ERS	Return	12.70%	9.00%	5.20%
Oregon PERS	Return	12%	9.19%	5.37%
PSERS	Return	10.14%	7.35%	3.80%
SERS	Return	12.00%	7.90%	3.90%
South Dakota RS	Return	13.81%	10.97%	6.14%
Virginia RS	Return	12.10%	9.10%	4.90%
New Mexico Educational	Return	12.00%	8.70%	5.20%

Performance Consistency Across Time Periods and Peer Groups

- The performance ranking of PSERS and SERS when compared against a wider set of pension funds appears to show similar results.
- For all pension funds in the PPD of size >\$10bn (52 funds), the following rankings were obtained for net performance (6/30/2017):

	Overall Rank			
	1 Year	3 Year	5 Year	10 Year
SERS	***40/52	***45/52	***45/52	***49/52
PSERS	***48/52	***43/52	***49/52	***50/52

- Our peer group performance results are also confirmed by the plan's consultant reports for peer performance, which show consistently below median performance.
- This would suggest that PSERS and SERS have consistently low performance compared with US public pension plans, irrespective of peer grouping and over various time periods over the last 20 years.

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Fees and Costs Preliminary Analysis
(In Partnership with Novarca International)

Fees and Costs Preliminary Analysis – Initial Notes

- The primary focus of this analysis lies on Public Equity mandates; We have thus analysed all the SERS/PSERS Public Equity mandates for now.
- The **objective** was **to analyse the appropriateness of terms for public equity mandates** – fee levels, shared scale benefits, length of mandates, benchmarks.
- Despite having asked for un-redacted contracts and limiting our request to public equity, to date we have not received these contracts for SERS. The analysis, specifically on SERS, is thus based on assumptions and average rates that found in consultant reports.
- Due to the lack of data provided by the plans, it is difficult to make a statement of the potential overcharges.
- The data on performance used at time of producing this report is per end of June 2017 for PSERS and Dec 2017 for SERS.

Fees and Costs Preliminary Analysis – Executive Summary

SERS mandates:

- Many passive mandates, which seem generally to be priced fairly.
- There are four primary candidates for in depth review and potential renegotiation:
 - SERS Mandate 1: Agreement almost 9 years old, returns (3y ending June 2017) are poor.
 - SERS Mandate 7: Very expensive for Developed World Small Cap.
 - SERS Mandate 8: Agreement 8 years old.
 - SERS Mandate 11: Agreement 5 years old.
- MFN clauses don't guarantee best terms! And in fact, over time they tend to serve the asset manager more than the asset owner.
- For most investors Private Equity is the most expensive asset class, potential cost savings from Private Equity can therefore be substantial. However they need to be captured on longer time horizon than other asset classes, as fees can only be renegotiated upon new investments, after typically 7-10 years.

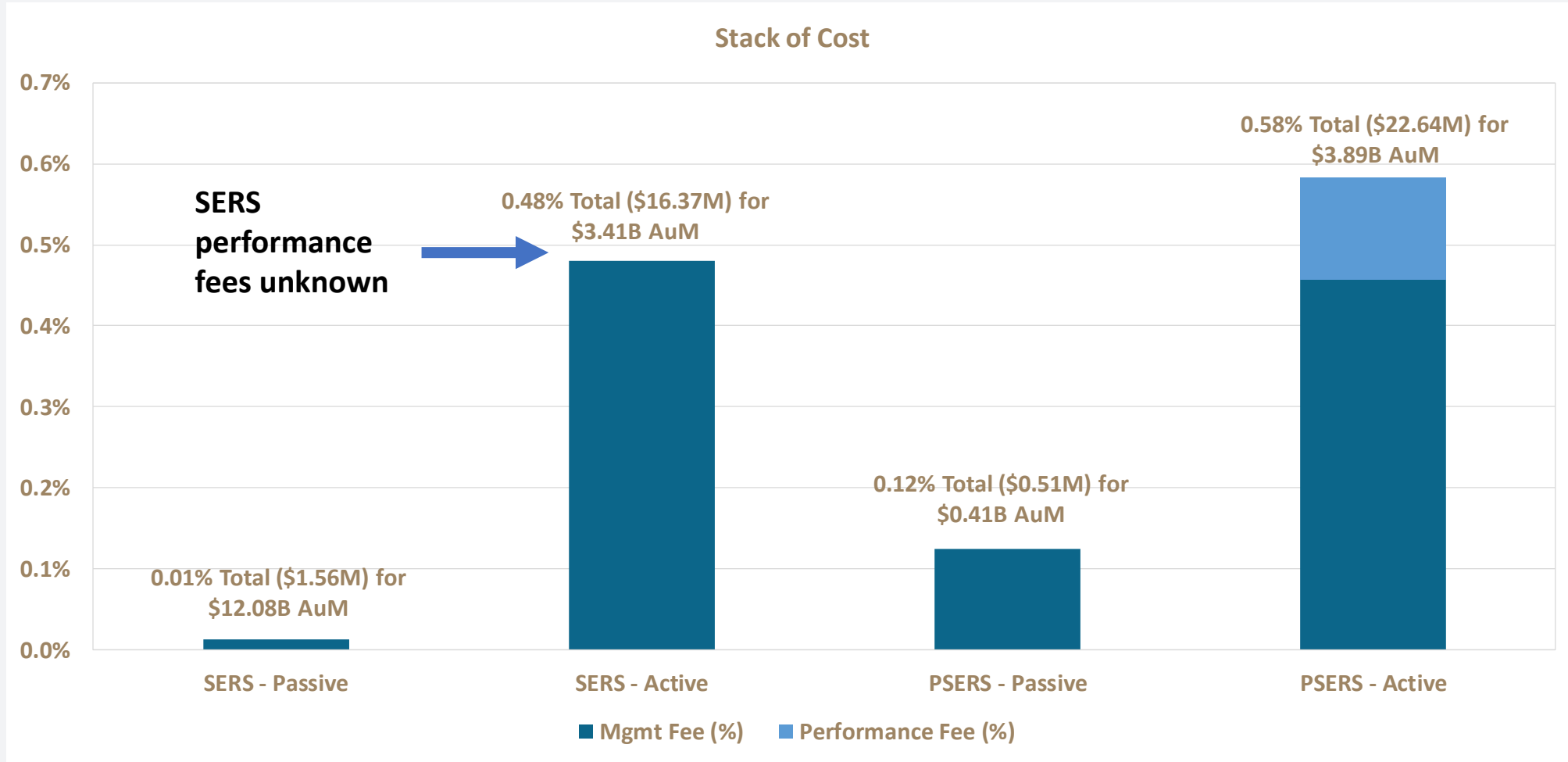
Fees and Costs Preliminary Analysis – Executive Summary

PSERS mandates:

- More expensive mandates don't guarantee better returns.
 - The cheapest out of 5 mandates in 'Intl. All Cap Equities', has enjoyed the best returns.
 - This cheapest mandate is priced at 44bps, the average of the other four is 81.75bps.
- There are several primary candidates for potential renegotiation:
 - All of the five International Equities Small Cap mandates.
 - PSERS Mandate 2, as SERS pays lower fees for the same.
 - PSERS Mandate 4: Absence of tiers above \$200M is not in line with best practice.
 - PSERS Mandate 5: Worst performer in category, despite highest fixed fee.
- For most investors Private Equity is the most expensive asset class, potential cost savings from Private Equity can therefore be substantial. However they need to be captured on longer time horizon than other asset classes, as fees can only be renegotiated upon new investments, after typically 7-10 years.

Overview - Cost Stack

The “Cost Stack” shows the total cost of ownership for all Public Equity mandates.



Notes:

(1) **Total Costs:** are under-estimated as we do not have contracted fee schedules from SERS, or details about operating expenses from any of the managers for either SERS or PSERS. Consequently, this review does not include other components making up the Total Cost of Ownership (incl. Holding Costs, Transaction Costs, Other Operating Expenses and 2nd Tier Fund costs).

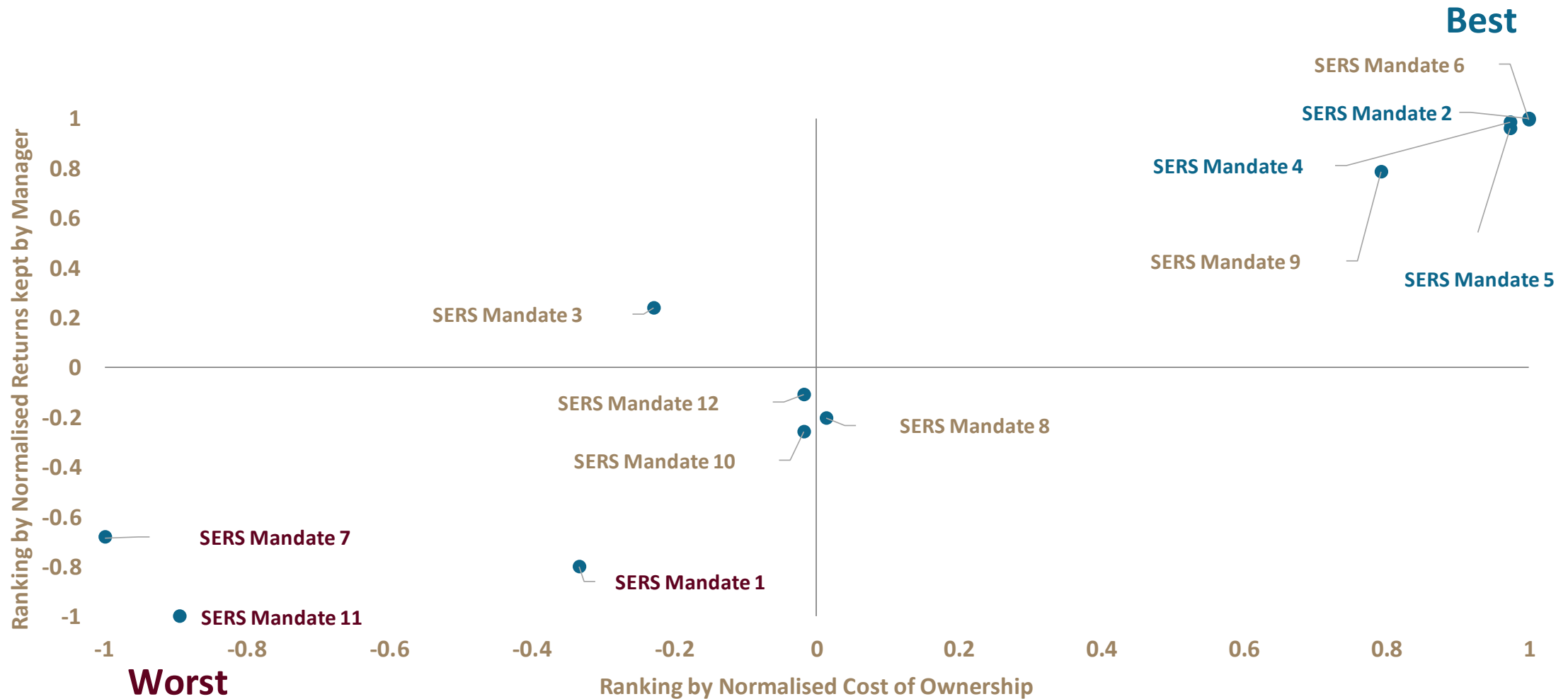
(2) **Public Equity :** Only external public equity mandates are included here.

Overview - Active Mandates: Cost and Performance

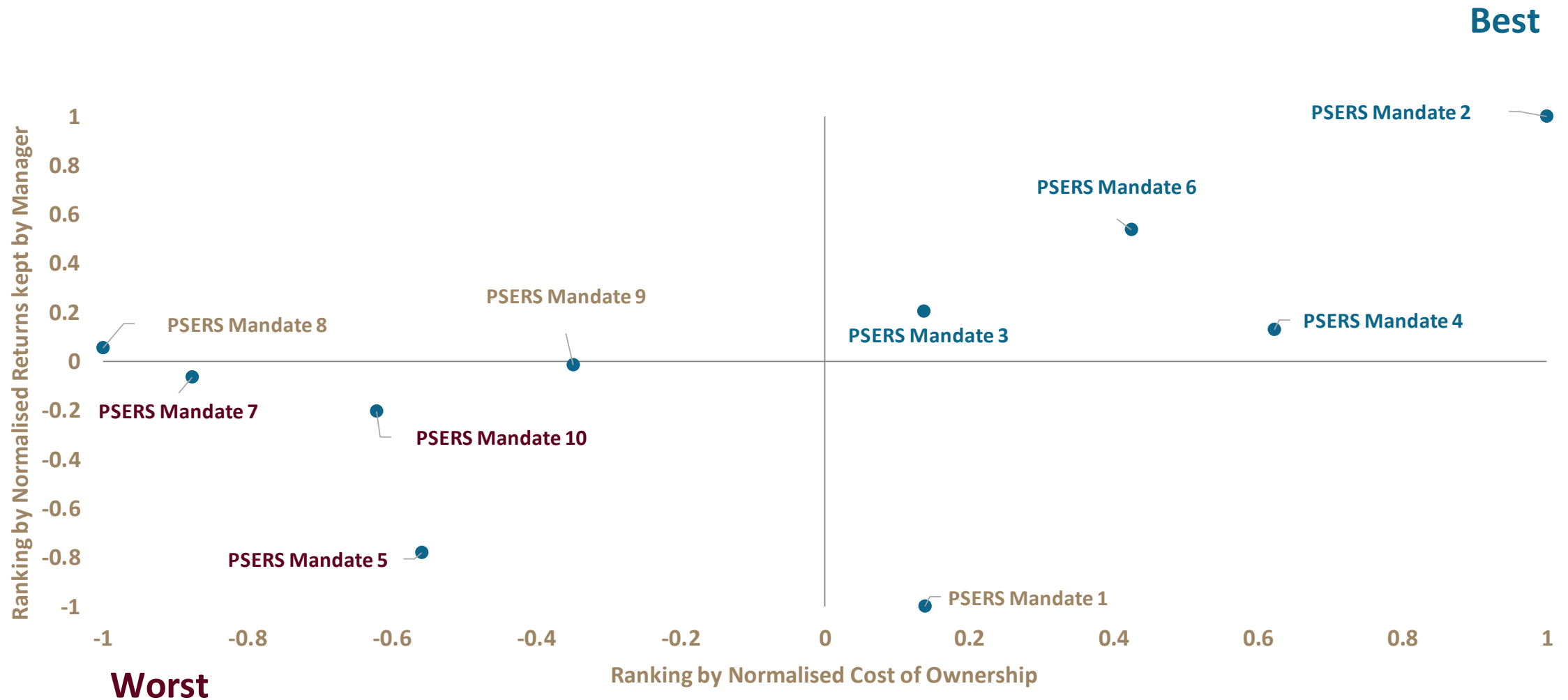
The benchmarks for SERS' active mandates are more granular than PSERS' active mandates. If performance fees are being introduced, then a more granular choice of benchmarks for PSERS may be appropriate.

	Manager	Share of AuM	Total Cost of Ownership	Gross Return	Benchmark	Benchmark Return	Alpha	As Of Date
SERS	SERS Mandate 1	14.24%	0.49%	7.89%	Russell Mid Cap Index	9.58%	-1.69%	31-Dec-17
	SERS Mandate 3	18.64%	0.46%	25.86%	Russell 2000 Grth Index	21.81%	4.05%	31-Dec-17
	SERS Mandate 7	18.40%	0.68%	12.08%	MSCI Wrld Ex US Sm Cap Index (Net)	12.96%	-0.88%	31-Dec-17
	SERS Mandate 8	25.57%	0.39%	11.79%	MSCI World Index (Net)	9.30%	2.49%	31-Dec-17
	SERS Mandate 10	10.07%	0.40%	11.20%	MSCI Emg Mkts Index (Net)	9.10%	2.10%	31-Dec-17
	SERS Mandate 11	3.02%	0.65%	9.05%	MSCI Emg Mkts Sm Cap index (Net)	8.44%	0.61%	31-Dec-17
	SERS Mandate 12	10.07%	0.40%	14.00%	MSCI Emg Mkts Index (Net)	9.10%	4.90%	31-Dec-17
	Aggregate (Active only)	100.00%	0.48%	13.99%		12.28%	1.71%	
	Manager	Share of AuM	Total Cost of Ownership	Gross Return	Benchmark	Benchmark Return	Alpha	As Of Date
PSERS	PSERS Mandate 1	7.74%	0.59%	1.30%	70% M1EFSC/15% M1EF/15% M1FEM	0.28%	1.02%	30-Jun-17
	PSERS Mandate 3	27.36%	0.59%	5.94%	MSCI AC World ex USA (Net)	0.80%	5.14%	30-Jun-17
	PSERS Mandate 4	26.79%	0.33%	3.07%	MSCI AC World ex USA (Net)	0.80%	2.27%	30-Jun-17
	PSERS Mandate 5	14.28%	0.79%	2.06%	MSCI AC World ex USA (Net)	0.80%	1.25%	30-Jun-17
	PSERS Mandate 6	6.15%	0.44%	6.58%	MSCI AC World ex USA Small Cap (Net)	3.31%	3.27%	30-Jun-17
	PSERS Mandate 7	6.60%	0.85%	6.02%	MSCI AC World ex USA Small Cap (Net)	3.31%	2.72%	30-Jun-17
	PSERS Mandate 8	4.76%	0.88%	7.70%	MSCI AC World ex USA Small Cap (Net)	3.31%	4.39%	30-Jun-17
	PSERS Mandate 9	2.31%	0.74%	5.92%	MSCI AC World ex USA Small Cap (Net)	3.31%	2.61%	30-Jun-17
	PSERS Mandate 10	4.02%	0.80%	4.24%	MSCI AC World ex USA Small Cap (Net)	3.31%	0.93%	30-Jun-17
	Aggregate (Active only)	100.00%	0.58%	4.32%		1.36%	2.96%	

SERS Mandates: Ranking by Costs and Returns Retained



PSERS Mandates: Ranking by Costs and Returns Retained



SERS Mandates: Key points from Preliminary Analysis

- As mentioned, SERS have not provided un-redacted contracts. By not being transparent on asset managers' contractual details serves only one party's interest: that of the asset managers.
- From experience, whenever clients are told that contractual terms are trade secret of the manager, it is an indication that these should be reviewed.

From an RVK report (SERS' consultant) we have taken the average fees paid on Public Equity and used this for the analysis:

- Passive mandates seem generally fairly priced.
- One of the two active mandates in International Developed Equity, SERS Mandate 7, seems very expensive.

Private Equity:

This report is not focused on Private Equity, but we have learned that there is a large number of individual PE investments in SERS' portfolio. Such a large volume of small PE investments is by definition difficult to manage / monitor and should be looked at in more detail for potential cost savings.

PSERS Mandates: Key points from Preliminary Analysis

- Two managers capture a (too) large portion of the alpha generated, PSERS Mandate 5 (38% in 2017, 3y rolling) and PSERS Mandate 1 (45% in 2017, 3y rolling).
- International Small Cap mandates show large price differences, ranging from 44bps to 88bps (on similar sizes). Interesting side note: the cheapest is the best performer in recent years *.
- 30% out of mandates' fee schedules have not been revised in 5 years or more.
- SERS is paying lower fees on same PSERS Mandate 2 product, despite SERS' smaller investment size.
- PSERS does not seem to have a sufficiently granular choice of benchmarks for their active managers. Albeit this helps in overall comparison it could be problematic where performance fees are or have been introduced as one needs to make sure the benchmark properly reflects the risk of the investment.

** Note that the performance data available upon production of this report ends June 2017.*

Self-Assessment of the Plans (1/2)

As part of the review, the plans were asked to participate in a self-assessment on their investment cost. Here is a shortened version and excerpt of the answers provided.

1. On a scale from 1-10, where do you think your management fees are placed in the market (1 being least competitive, 10 being most competitive)	
PSERS	SERS
10	10
Both plans justify this (self assessed) ranking, by the fact of having MFN clauses in place.	
2. What is the average age of the fee schedules in your portfolio ?	
PSERS	SERS
Not tracked	Not tracked
3. What is the average age of investment mandates in your portfolio ?	
PSERS	SERS
Not tracked	Not tracked
4. What percentage of your asset managers have confirmed in writing that <u>they don't receive</u> commissions, rebates, retrocessions and the likes associated with your investment ?	
PSERS	SERS
"PSERS does not maintain this information"	See comment
SERS has not directly answered the question, however indicates that this is addressed as part of their Due Diligence.	

Self-Assessment of the Plans (2/2)

5. What percentage of your asset managers have confirmed in writing that they don't pay and have not paid any commissions, introduction fees or the likes associated with your investments ?

PSERS

SERS

"PSERS does not maintain this information"

See comment

SERS has not directly answered the question, however indicates that this is addressed as part of their Due Diligence. SERS also mentions that they do not directly work with placement agents and requires the fund sponsors to attest that no placement agent fees have been paid to attract SERS' investment.

6. Does your plan operate under a fee budget for investment managers ?

PSERS

SERS

No

No

7. In negotiating investment costs, does the Plan have a process for determining the best alternative to the investment under consideration ?

PSERS

SERS

Yes

Yes

8. Do your brokers, or those of your managers, make use of bundled brokerage ?

PSERS

SERS

Yes, in some cases

Yes, several of them

9. Are you conducting regular transaction cost analyses on equities, fixed income and FX ?

PSERS

SERS

No

Yes, quarterly

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Thank You

Appendix

- Absolute Investment Performance SERS & PSERS (Table)
- Absolute Investment Performance Peer Group
- Consultant Peer Performance Results
- Peer Group Selection Process
- Main Data Caveats and Analysis Considerations
- PSERS High Yield/Opportunistic Initial Analysis

2017 Absolute Performance | SERS & PSERS

PSERS

Category	Total Portfolio			Asset Class																									
				Equity			Fixed Income			Private Equity			Hedge Funds			Commodities			Real Estate			Cash				Other			
	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	3Y	5Y	10Y	1Y	3Y	5Y	10Y
Return	10.14%	7.35%	3.80%	21.30%	12.56%	5.20%	5.22%	5.17%	7.36%	12.04%	8.51%	5.97%	8.09%	2.06%	2.51%	-3.48%	-4.62%	-3.42%	8.38%	11.18%	0.66%	No Benchmark in Annual Report				-	-	-	-
Benchmark	6.39%	5.47%	2.80%	19.91%	12.92%	5.59%	3.09%	2.83%	6.10%	3.05%	3.96%	3.61%	5.17%	2.73%	3.34%	-6.41%	-6.49%	-5.08%	2.92%	8.59%	5.20%					-	-	-	-
Difference	3.75%	1.88%	1.00%	1.39%	-0.36%	-0.39%	2.13%	2.34%	1.26%	8.99%	4.55%	2.36%	2.92%	-0.67%	-0.83%	2.93%	1.87%	1.66%	5.46%	2.59%	-4.54%					-	-	-	-

SERS

Category	Total Portfolio			Asset Class																									
				Equity			Fixed Income			Private Equity			Hedge Funds			Commodities			Real Estate			Cash				Other			
	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	5Y	10Y	1Y	3Y	5Y	10Y	1Y	3Y	5Y	10Y
Return	12.00%	7.90%	3.90%	20.40%	11.40%	3.20%	2.70%	3.10%	5.00%	11.10%	9.20%	8.40%	6.40%	2.80%	2.00%	-	-	-	1.20%	8.40%	2.10%	1.20%	0.80%	0.60%	1.00%	-	-	-	-
Benchmark	11.70%	8.10%	5.30%	19.00%	10.70%	3.90%	-0.30%	2.20%	4.50%	21.60%	16.60%	10.80%	9.40%	6.90%	5.40%	-	-	-	6.40%	10.90%	4.50%	0.50%	0.20%	0.20%	0.60%	-	-	-	-
Difference	0.30%	-0.20%	-1.40%	1.40%	0.70%	-0.70%	3.00%	0.90%	0.50%	-10.50%	-7.40%	-2.40%	-3.00%	-4.10%	-3.40%	-	-	-	-5.20%	-2.50%	-2.40%	0.70%	0.60%	0.40%	0.40%	-	-	-	-

2017 Absolute Performance | Peer Group

Plan (2017)	Category	Total Portfolio		
		1Y	5Y	10Y
Arizona SRS	Return	13.90%	9.60%	5.60%
	Benchmark	14.00%	8.80%	5.20%
	Difference	-0.10%	0.80%	0.40%
Georgia Teachers	Return	12.50%	9.40%	6.10%
	Benchmark	1.6%	1.3%	1.6%
	Difference	10.90%	8.10%	4.50%
Illinois Teachers	Return	12.60%	9.20%	4.80%
	Benchmark	11.40%	9.30%	5.30%
	Difference	1.20%	-0.10%	-0.50%
Iowa PERS	Return	11.70%	8.65%	5.89%
	Benchmark	11.17%	8.61%	6.28%
	Difference	0.53%	0.04%	-0.39%
LA County ERS	Return	12.70%	9.00%	5.20%
	Benchmark	11.20%	8.80%	5.40%
	Difference	1.50%	0.20%	-0.20%
Oregon PERS	Return	12%	9.19%	5.37%
	Benchmark	13.02%	9.85%	N/A
	Difference	-1.10%	-0.66%	N/A
PSERS	Return	10.14%	7.35%	3.80%
	Benchmark	6.39%	5.47%	2.80%
	Difference	3.75%	1.88%	1.00%
SERS	Return	12.00%	7.90%	3.90%
	Benchmark	11.71%	8.10%	5.30%
	Difference	0.30%	-0.20%	-1.40%
South Dakota RS	Return	13.81%	10.97%	6.14%
	Benchmark	10.96%	9.07%	5.31%
	Difference	2.85%	1.90%	0.83%
Virginia RS	Return	12.10%	9.10%	4.90%
	Benchmark	11.80%	8.50%	4.50%
	Difference	0.30%	0.60%	0.40%
New Mexico Educational	Return	12.00%	8.70%	5.20%
	Benchmark	12.10%	7.80%	4.60%
	Difference	-0.10%	0.90%	0.60%

Consultant Peer Performance Analysis

Higher the Percentile, the lower the ranking

Performance Analysis					
PSERS					
Year	Report (Population of funds)	1 yr	3yr	5yr	10 yr
2014	Hewitt ennisknupp (304, 287, 289,163)	81st percentile	74h Percentile	62nd Percentile	29th Percentile
2015	Aon Hewitt (342, 321, 303, 179)	53rd Percentile	88th Percentile	74th Percentile	53rd Percentile
2016	Aon Hewitt (398, 384, 366, 240)	25th Percentile	55th Percentile	62nd Percentile	79th Percentile
2017	Aon Hewitt (386, 366, 356, 283)	82nd Percentile	62nd Percentile	87th Percentile	97th Percentile

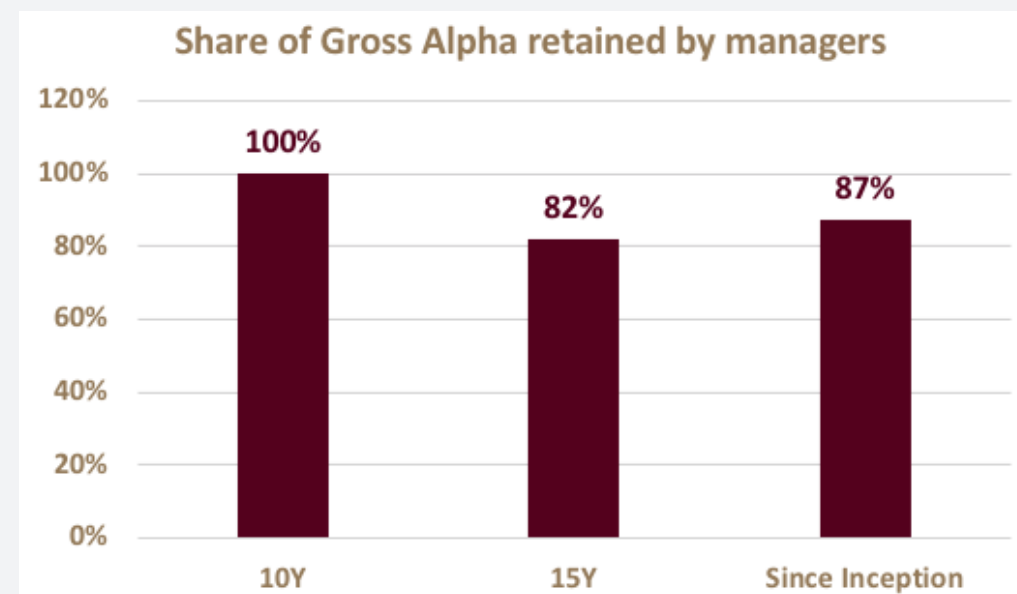
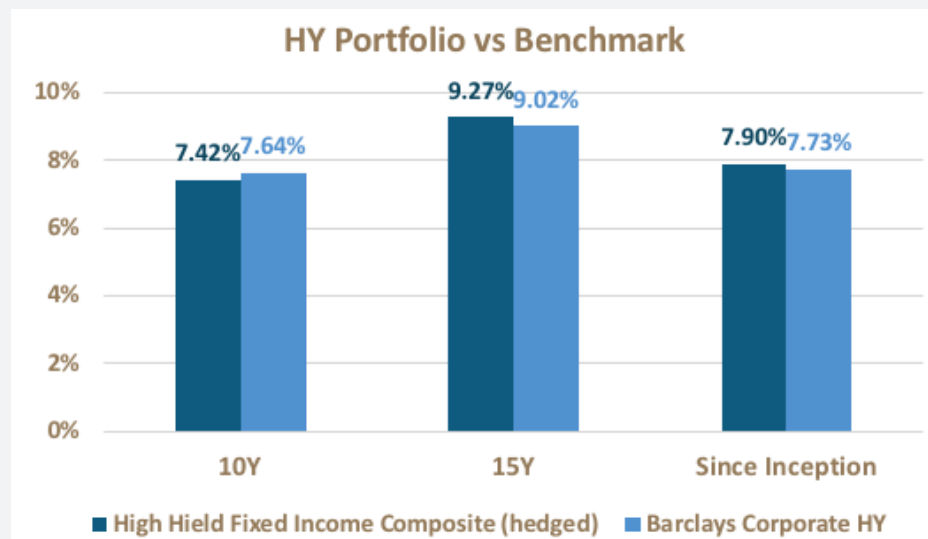
SERS (gross returns)					
Year	Report (Population of funds)	1 yr	3yr	5yr	10 yr
2013	RVK (71, 69, 67, 59)	70th Percentile	70th Percentile	99th Percentile	6th Percentile
2014	RVK (78, 71, 68, 61)	60th percentile	53rd percentile	68th Percentile	10th Percentile
2015	RVK (78, 73, 71, 66)	31st Percentile	57th Percentile	57th Percentile	14th Percentile
2016	RVK (85, 84, 81, 73)	49th Percetile	46th Percentile	38th Percentile	55th Percentile
2017	RVK (79, 77, 77, 72)	54th Percentile	54th Percentile	59th Percentile	78th Percentile

PSERS Mandates: Key points from Preliminary Analysis

High Yield / Opportunistic:

- PSERS investments of \$4.46B in this asset class are in, essentially, Private Debt Limited Partnerships. There are classified under Mezzanine HY, Opportunistic HY, Real Asset HY and Senior Loans HY. These investments are benchmarked against Barclays US Corp High Yield Index.
- The performance of each allocation within are wildly different though. The range being 40% wide p.a. over last 3 years. But as an aggregate, long term performance has been similar to the benchmark. 10 year net value add was -0.22% p.a.
- As per the report “Response to PSERB Resolution 2017-41 Re: Management Fees – July 2018”, the aggregate fees paid by PSERS is 114.08bps.

- Assuming same costs historically, this implies a gross return of 8.56% p.a. over 10 years and a gross alpha of 92bps. The net alpha is -22bps (as stated above), so the entire alpha is being paid to the asset managers. This is besides the cost of an internal team to select and manage these (currently, 37) allocations.
- Novarca has experience in negotiating multiple HY active mandates with allocations that were less than a tenth of PSERS in this asset class. These mandates cost about 25-30bps (compared to 114.08bps here).
- Additionally, if the aim is to generate similar long-term returns as the asset-class benchmark, then an even cheaper passive mandate should be considered. This will have negligible internal costs compared to a team managing Private Debt LPs.



Main Data Caveats & Analysis Considerations

- **There is no single established process or methodology for performing asset allocation and investment performance assessments** – Conversations with industry experts illustrated that there is no single or established process/methodology for performing asset allocation and investment performance assessments for pension funds. Both the process and methodology must be tailored to respond to the hypotheses being tested, the scope of the project, and the data that is readily available to support insight generation. Industry experts highlighted that in addition to data availability, another major challenge involves the rationalization and standardization of asset classes across peers to achieve a relative "apples to apples" comparison.
- **Pension funds often have different fiscal year end dates and reporting cycles** – Pension funds have different fiscal year end dates and therefore different reporting cycles (e.g. PSERS fiscal year end is June 30 and SERS is December 31), which entails that comparisons across fiscal years could cover diverse timeframes across peers. To help minimize the impact of these diverse timeframes, we selected the last year (2017) for which all peers have generated final reports and established a specific comparison time frame from 2008-2017 to accommodate the (1, 3, 5, and 10 year annualized) data requirements for investment performance. In addition, we applied an additional criteria category for the peer group and ensured that only peers that had a June 30 end date would be included. Given that SERS has a December 31st end date, the project team leveraged a 2017 Q2 investment report (June 30) provided by SERS for this project to control for the time difference
- **Data transparency and availability varies widely across pension funds** - The type and level of data that pension funds publish varies widely, not only between pension funds, but also for the same fund across time (e.g. a pension fund can change how they categorize or report on a certain asset class across different years). Moreover, the data gathering process is highly manual as data points need to be extracted from individual annual reports. To help overcome these challenges, we leveraged the Public Pensions Database (PPD), which is developed and maintained by the Centre for Retirement Research at Boston College. This database is maintained by an impartial institution, has been used widely for academic research, and contains a large part of the data required for the assessment. To further strengthen confidence in the data, an extensive audit was carried out of the PPD data against annual reports and data gaps and discrepancies were addressed accordingly
- **Discrepancies exist in how funds categorize asset classes** – The discrepancies that exist between how funds categorize asset classes was flagged at the beginning of the project. Pension funds often invest in similar assets but categorize them differently. For example, Nevada PERS categorizes investments in Private Equity and Real Estate as "Private Markets", while other funds report on them independently. Another example is how Mississippi PERS breaks down Equity into US Equity, International Equity, and Global Equity. In contrast, other funds report US Equity and International Equity, while others simply have a single Equity category. An additional challenge faced across most funds is that some report "Cash" allocations within Fixed Income, while others report in separately. Those that roll-up Cash into Fixed Income, often only do so for asset allocation, but limited information is made available on benchmarks and investment returns. To help overcome this challenge, we leveraged the 9 common asset classes used by the Public Pensions Database and audited information against annual reports to ensure consistency across the analysis

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