

Trends in State Pension Asset Allocation and Performance

June 26, 2012

Public pensions are today grappling with how to achieve actuarial returns in a low growth, low interest rate world. Traditional portfolios that rely primarily upon stocks and bonds produced mid-single digit returns over the last decade with uncomfortable levels of volatility. And unfortunately, looking ahead, not much is expected to change with industry return forecasts of 5% to 6% from combined stock and bond allocations, well below the 7.5% to 8.0% actuarial rates for most public pension systems. Our most recent survey of state-wide pension systems uncovers investment trends that potentially address the performance gap and portfolio volatility.

1. State pension systems shifted 10% of their assets from public equities to alternatives over the five years ending June 30, 2011, keeping other asset class weights largely unchanged.
2. Alternatives now average 20% of total state fund assets, but individual state allocations vary widely, from 0% to 61% of total assets.
3. Increased allocations to alternatives have been largely rewarded as state funds with higher alternative allocations experienced higher 10 year returns than those with lower alternative allocations.
4. However, overall 10 year state fund returns were more influenced by manager/fund selection than by asset allocation, putting in question the conventional wisdom that 90% of performance is asset allocation.
5. Private equity and real estate allocations were the primary driver behind the better performing state funds, with a couple of exceptions. Hedge fund allocations, averaging just 3% of total assets at June 30, 2011, were too small to have a material impact on 10 year returns.
6. Only one state fund reported a 10 year return for hedge funds; the shorter track record for hedge funds and lagging performance by states using fund-of-funds made them a roughly neutral contributor to overall performance.
7. Endowments, whose allocation to alternatives averages 53% of total assets, placed a much greater 23% weight to hedge funds which contributed positively to a 10 year total return that averaged 1.2% per year better than state pension returns.
8. Fixed income allocations are increasingly incorporating sub-allocations to credit oriented vehicles beyond high yield bonds with positive results, a trend we expect will continue.
9. Portfolio leverage is playing a meaningful role to improve risk-adjusted returns among a few state funds.

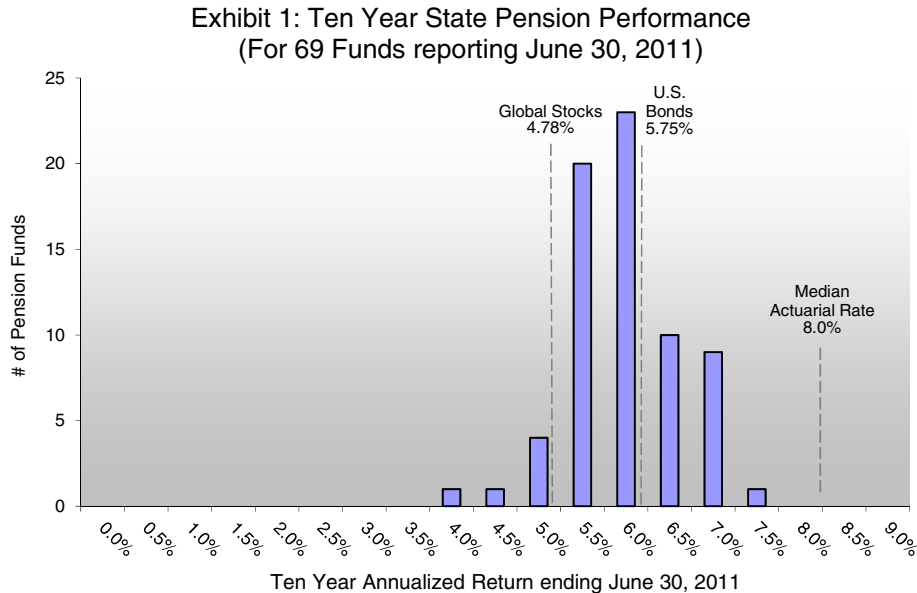
We draw these findings from data and descriptive narrative provided in the Comprehensive Annual Financial Reports (“CAFRs”) published by state pension systems.

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Long Term State Fund Performance

Exhibit 1 shows the distribution of 10 year annualized returns for 69 state pension systems reporting returns as of their fiscal year end June 30, 2011.¹



Ten year pension returns are fairly tightly distributed in Exhibit 1 with a 5.7% median return and a fairly small 0.8% difference between first and third quartile returns, as shown in Exhibit 2.

Exhibit 2: Quartile Ten Year Pension Returns

	<u>10 Yrs</u>
Highest	7.1%
First Quartile Return	6.2%
Median Return	5.7%
Third Quartile Return	5.4%
Lowest	4.0%

A tight 10 year return distribution is to be expected with only a one percentage point difference in stock (4.78%) and bond (5.75%) index returns, thereby dampening any return differences among funds as a result of variations in stock/bond allocations.

At June 30, 2011 the median funding ratio (assets divided by liabilities) among state pensions was 80%, a deficit that is entirely the byproduct of a shortfall between the 5.7% median investment return and the 8.0% median actuarial rate, compounded over ten years.

Those responsible for investing are gradually changing strategies, not convinced that the public markets will recover the shortfall experienced over the last 10 years. In fact, forecasts for stock and bond returns point to a worsening of funding ratios. Consensus long term stock and bond returns average 7.5% and 3.0%, respectively, producing an overall expected return of 6.1% from traditional asset classes, which would further push down the average funding ratio to 68% in another 10 years.

¹ Twenty-seven state-wide funds are excluded from Exhibit 1 either because their fiscal years do not end on June 30 or their 10 year returns are not available or could not be calculated from disclosures.

Shifts in Asset Allocation

Most pension boards and staffs are fully aware of the investment challenges ahead and have been gradually shifting their asset allocation strategies.² The increased use of alternative investments – including private equity, private real estate, hedge funds, and real assets – has been by far the most pronounced change. Exhibit 3 reports state pension allocations for major asset classes at fiscal-end 2006 and 2011. Alternative investments have doubled from 10% in 2006 to 20% in 2011. Assets going to alternatives largely came from public equities, which fell from 61% to 51% of assets.

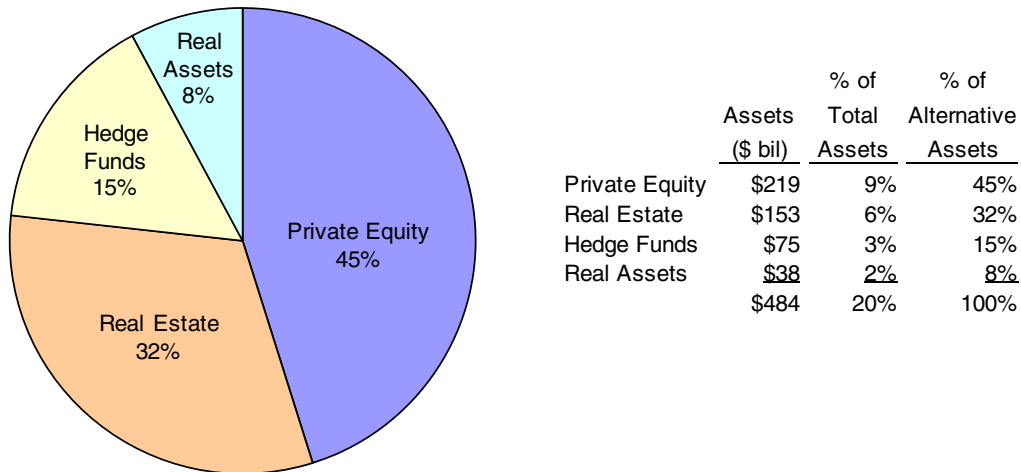
Exhibit 3: Changes to Overall State Pension Asset Allocation

	<u>2006</u>	<u>2011</u>	<u>Change</u>
Public Equities	61%	51%	-10%
Fixed Income	26%	25%	-1%
Alternatives	10%	20%	10%
Cash	1%	2%	1%
Other	<u>1%</u>	<u>1%</u>	0%
Total	100%	100%	

While reducing equity allocations overall, pensions continue to diversify their stock portfolios by better balancing their U.S and international holdings. U.S. equities represented 71% of total equities in 2006, but that allocation has since fallen to 55% in 2011.

Exhibit 4 shows the fiscal 2011 breakdown of alternative sub-asset classes. Private equity is the largest alternative asset class, representing 45% of total alternatives. Real estate is second largest at 32% of alternatives. Hedge funds and real assets follow, equaling 15% and 8%, respectively, of the total alternatives pie.

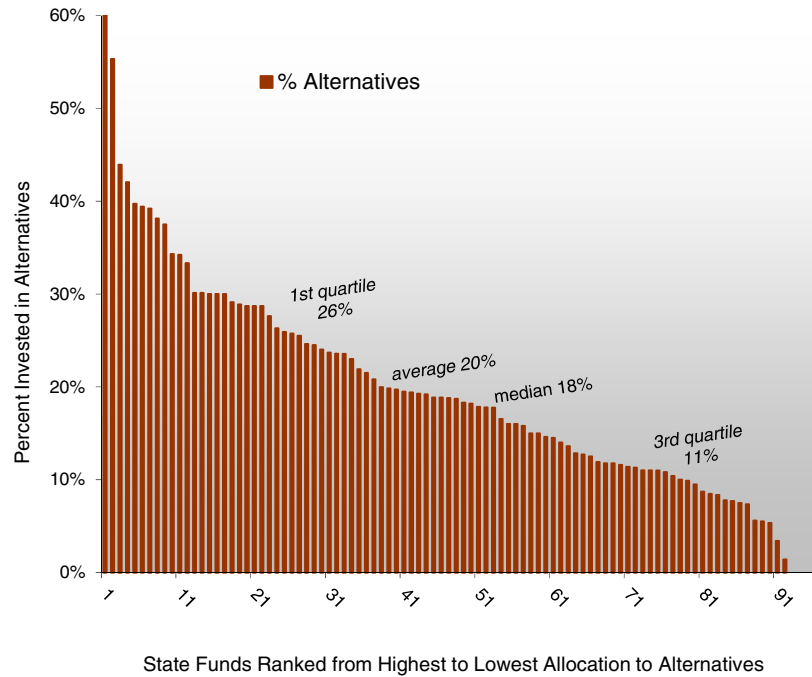
Exhibit 4: State Pension Allocations to Alternative Assets



The industry wide allocations reported above mask considerable variability among individual pension plans, as shown in Exhibit 5.

² Asset allocation data is based upon 96 state pension systems, including those whose fiscal 2011 end is not June 30.

Exhibit 5: Distribution of Alternative Allocations Among State Pensions



Allocations to alternatives range from 0% for five of the 96 state pension systems reporting, to a high of 61%.³ There is also considerable difference in allocations among systems ranking in the middle 50%. The 3rd quartile allocation to alternatives equals 11% of assets and the 1st quartile allocation equals 26% of assets. It is also worth noting that a dozen systems have one-third or more of their assets invested in alternatives. Only a handful of systems do not invest in alternatives, due to statutory restrictions.

Comparison to Endowments

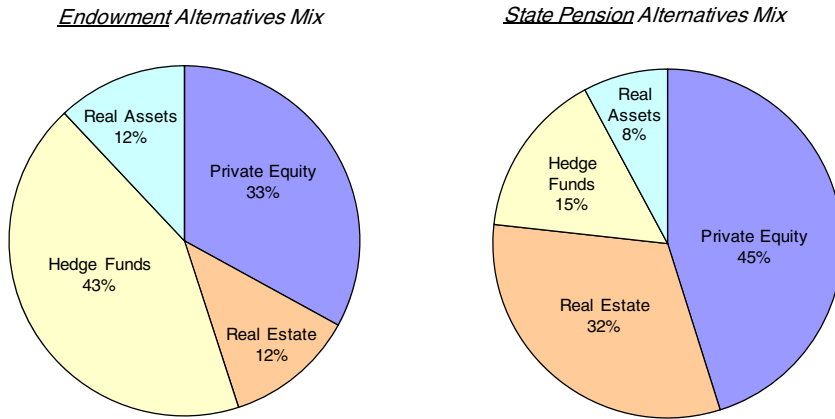
Some public pensions are shifting their asset allocation toward to what is referred to as the “endowment model.” Endowments and foundations have historically had high allocations to alternatives. In comparison to the 20% average state pension allocation to alternatives, endowments reported an average alternatives allocation equal to 53% of assets at June 30, 2011.⁴

The composition of alternatives within endowments also differs substantially from state pensions. As shown in Exhibit 6, hedge funds represent the largest endowment alternative asset class at 43% of alternative assets, followed by private equity at 33%. Current trends within state pensions show a shift toward hedge funds and away from real estate, which if continued will bring the composition of alternatives closer to the endowment model.

³ Georgia and Oklahoma have no alternative investments while Pennsylvania SERS reports a 61% allocation to alternatives. Pensions & Investments recently reported that Penn SERS has decided to gradually reduce its 61% alternatives exposure due to future liquidity needs.

⁴ Source: NACUBO/Commonfund

Exhibit 6: Composition of Alternative Investments for Fiscal 2011

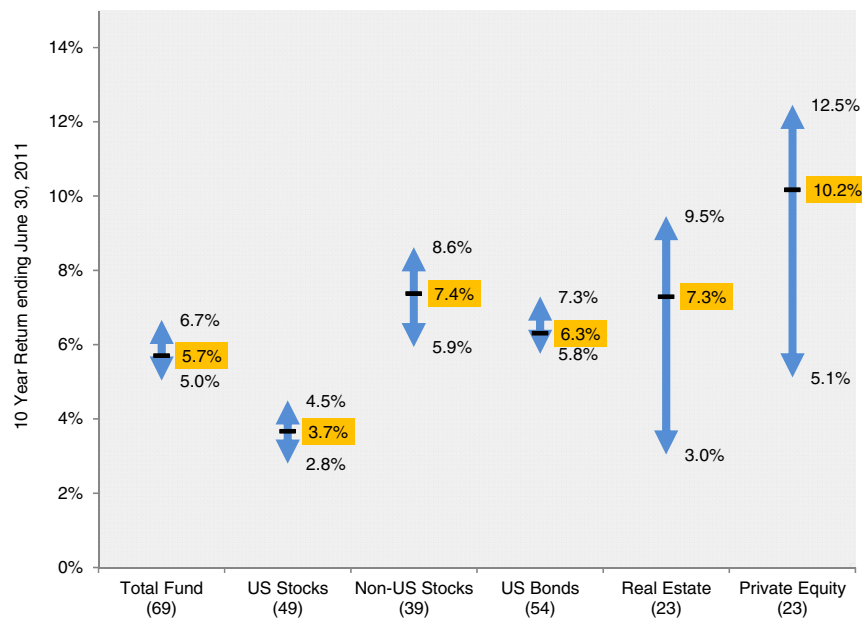


The higher endowment allocation to alternatives very likely explains their better performance over the last decade compared to public pensions. For 73 endowments with assets exceeding \$1 billion, the average 10 year return was 6.9%, or 1.2% above the 5.7% average state pension return for the same period.⁵ Over the last five years, the average large endowment return was 5.4%, or 0.7% above the 4.7% average state pension return. It is interesting to note that large endowments performed comparatively well over the last five years despite some well publicized liquidity issues.

State Pension Performance across Asset Classes

Exhibit 7 reports the distribution of 10 year asset class returns for state pensions with 2011 fiscal years ending June 30, 2011.

Exhibit 7: 10th to 90th Percentile Distribution of State Fund Returns (10 Years ending June 30, 2011)



⁵ Source: NACUBO (“National Association of College and University Business Officers”)

Five major asset classes are represented together with total fund returns, matching those shown in Exhibit 1. Not all 69 state pensions reporting 10 year total fund returns ending June 30, 2011 also report all asset class returns. We display the number of state funds represented in each asset class distribution below the asset class labels along the horizontal axis. We believe that the omission of states that either do not have June 30 fiscal years or those who do not report asset class returns – either because they did not invest for the entire 10 year period or chose not to report – does not take away from our analysis.

We referenced the tight distribution in 10 year returns among state pension systems in Exhibit 1, and it shows again in the left-most bar in Exhibit 7. We also suggested that the reason was the similarity of equity and fixed income returns over the 10 year period, effectively dampening any asset allocation influence. Exhibit 7 provides another explanation: that state funds produced very similar 10 year returns within their two largest asset classes, U.S. stocks and fixed income. The difference between top and bottom performing U.S. stock and fixed income portfolios was well below two percentage points. There are three explanations. First, index funds are a growing percentage of stock and bond allocations across state funds. Second, most active managers manage their portfolios to vary only modestly from the index returns. Finally, state funds use multiple active managers whose combined return deviations from benchmark indices is far less than individual differences.

On the other hand, the distribution of 10 year returns for real estate and private equity is very wide for state systems, suggesting that not only is implementation (manager selection) important, but that states have varied in their practices. The median returns for real estate (7.3%) and private equity (10.2%) are very attractive 10 year outcomes, particularly compared to U.S. stocks and bonds. However, differences in implementation (manager selection) proved to be very important for individual state fund returns in real estate and private equity.

Importance of Asset Allocation versus Manager Selection

A seminal 1986 study⁶ demonstrated that asset allocation was far more important in determining overall portfolio return (explaining 94% of total return) than manager selection and market timing (explaining 6%). While that finding generally fits the 1980s and 1990s, it likely applies less to current state fund portfolios and performance. In fact, over the last 10 years, just the opposite has transpired. We find that asset allocation explained a mere 8% of the variation among state fund returns while manager/fund selection accounted for 92% of the variation among state fund returns. Not surprising, the 8% explained by asset allocation came from allocations to alternatives (higher allocations meant higher overall returns) and the 92% explained by manager selection came from the less efficient asset classes including non-U.S. equity, real estate, and private equity.⁷

The implication of these findings is that those responsible for state fund assets need to recognize that investment strategy and selection within alternative asset classes is as important as the amounts allocated to these asset classes. Unlike publicly traded stocks and bonds where implementation/selection risk can be minimized by investing in an efficient and naturally top quartile performing index fund, alternative asset classes offer no backstop index and deliver higher or lower returns depending upon the capabilities of those selecting managers and strategies.

⁶ Brinson, Hood, and Beebower (BHB), “Determinants of Portfolio Performance,” (1986).

⁷ Our analysis, based upon a regression of asset allocation and 10 year returns, does not directly compare with the BHB approach, which is based upon quarterly data. Asset allocation likely explains short term returns better than longer term results.

Stocks and Bonds

The capacity to earn excess returns in traditional asset classes has been a challenge for many years. This includes state pension funds. Exhibit 8 subtracts benchmark returns from asset class total returns reported in Exhibit 7. These return differences measure the success state funds have had in adding value within asset classes over standard industry-wide benchmark index returns.

Exhibit 8: Distribution of Excess Return for 10 Years ending June 30, 2011

	<u>U.S. Stocks</u>	<u>Non-U.S. Stocks</u>	<u>Fixed Income</u>	<u>Real Estate</u>	<u>Private Equity</u>
Top Decile	1.1%	1.1%	1.5%	1.9%	9.1%
1st Quartile	0.6%	0.2%	1.1%	1.4%	7.6%
Median	0.3%	-0.1%	0.6%	-0.3%	6.8%
3rd Quartile	-0.1%	-1.2%	0.2%	-2.0%	4.4%
Bottom Decile	-0.6%	-1.6%	0.0%	-4.6%	1.7%
Benchmarks:	US Stocks:		Russell 3000 Index		
	Non-US Stocks:		MSCI ACWI ex US Index		
	Fixed Income:		Barclays Aggregate Index		
	Real Estate:		NCREIF Property Index		
	Private Equity:		Russell 3000 Index		

State funds showed mixed results in their ability to exceed U.S. and non-U.S. stock returns over the 10 year period. Median excess returns centered around zero, with fairly modest upside returns, topping off at 1.1%. Somewhat surprising is the observation that it appears as though it was more difficult to outperform the index in non-U.S. markets, contrary to the general wisdom that the foreign markets are less efficient. Furthermore, there was material downside (negative excess return) for engaging in active management, particularly in non-U.S. markets. These results suggest that active management for publicly traded equity markets should be seriously assessed by state funds before embracing the often time-consuming RFP merry-go-round typically associated with selecting active managers.

Fixed income excess returns were attractive over the 10-year period, especially when juxtaposed to stock excess returns. Most active fixed income managers were rewarded over the 10 year period for taking more credit risk and duration risk than the Barclays Aggregate Index. Beginning to end, both credit risk and duration risk were rewarded, explaining much of the positive excess returns achieved by almost all the state funds. This enviable outcome can be short lived if credit spreads widen and interest rates rise. For example, for the 10 year period ending in fiscal 2009, all state fund fixed income excess returns were negative. Our findings suggest that producing excess return within fixed income will be heavily influenced by the direction of credit spreads and interest rates.

Private Real Estate

Real estate is the longest tenured alternative asset class among public pensions but it has experienced little growth – measured as a percentage of total assets – over the past 20 years, largely due to a severe drawdown in commercial real estate property values in the early and mid-1990s. That experience changed the general perception of real estate from a low risk, buy & hold, and inflation sensitive asset class to a risky investment that requires more aggressive management similar to private equity.

Those pension plans that have remained committed to private real estate have generally been rewarded. Exhibit 9 reports private real estate returns covering the 10 years ending June 30, 2011 for 23 reporting state pension systems.

Exhibit 9: Private Real Estate Performance – Ten Years ending June 30, 2011

	<u>10 Year Return</u>
1 Ohio STRS	10.4%
2 Washington State Inv Board	9.6%
3 Oregon PERS	9.5%
4 Mass PRIT/PRIM	9.2%
5 NY State Teachers RS (NYSTRS)	9.1%
6 Alaska Permanent Fund*	9.0%
7 Virginia Retirement Systems	9.0%
8 New Hampshire RS	8.2%
9 Kansas PERS*	7.6%
10 Iowa PERS	7.6%
11 Wisconsin RS (SWIB)	7.5%
12 Florida Retirement System DB Plan	7.3%
13 Arkansas TRS	7.0%
14 CalSTRS	6.7%
15 Illinois Teachers	6.2%
16 Pennsylvania Public Schools ERS	6.0%
17 Minnesota SRS	6.0%
18 Tennessee Consolidated RS	5.2%
19 Ohio School Employees*	4.5%
20 Illinois SERS	4.0%
21 North Carolina RS	2.8%
22 CalPERS	2.4%
23 Montana PERS	<u>0.0%</u>
State Fund Real Estate Average	6.7%
NCREIF Property Index*	7.6%
NFI-OECD Index	4.7%
NAREIT	10.7%

* gross of fee returns

There is a considerable range in reported 10 year real estate returns, not dissimilar to private equity, which suggests that implementation strategy can be very important in long term performance.

The average real estate return for the 23 reporting state funds is 6.7%, which helped overall performance for the 10 year time period. Judging relative performance is not straightforward as states vary in their use of benchmarks for this asset class.

The NCREIF Property Index is by far the most common performance benchmark for private real estate, comprised of over 7,000 institutional commercial properties representing over \$300 billion in assets. The Index returned 7.6% over the 10 year period, slightly outperforming the 6.7% average return. The NCREIF Property Index does not incorporate management fees.

A second benchmark index used by some states is the NFI-OECD Index which constitutes 30 large open end comingled real estate funds with total assets of \$70 billion. The 4.7% return reported for the 10 years ending June 30, 2011 is net of fees and asset weighted.

Finally, the NAREIT index is a capitalization weighted index of publicly traded equity REITS. Its 10.7% return over 10 years reflects the strong relative performance of REITS versus private real estate.

Private Equity

Public pension systems have a long record investing in private equity, dating back to the early 1980s. Investors view private equity as a substitute for public equity, with the promise of higher return from superior management in exchange for illiquidity. Investments in private equity have been consistently rewarded over the last three decades. Exhibit 10 provides private equity performance for 23 public pension systems reporting 10 year returns ending June 30, 2011.

Exhibit 10: Private Equity Performance – Ten Years ending June 30, 2011

1 Wisconsin RS (SWIB)	13.2%
2 Texas TRS	13.1%
3 Minnesota SRS	12.7%
4 Montana PERS	11.5%
5 CalSTRS	11.3%
6 Arkansas TRS	11.2%
7 Pennsylvania Public Schools ERS	10.9%
8 Kentucky ERS Pension Fund	10.6%
9 NY State Teachers RS (NYSTRS)	10.5%
10 Mass PRIT/PRIM	10.4%
11 Virginia Retirement Systems	10.3%
12 Iowa PERS	10.2%
13 Washington State Inv Board	10.2%
14 Oregon PERS	10.0%
15 Rhode Island (ERS, TRS)	9.9%
16 Kansas PERS*	8.4%
17 CalPERS	8.4%
18 STRS Ohio	7.1%
19 Illinois Teachers	7.1%
20 Idaho PERS	5.7%
21 Florida Retirement System DB Plan	5.0%
22 Ohio School Employees RS*	3.2%
23 North Carolina RS	<u>2.2%</u>
Private Equity Average	9.3%
Russell 3000 Equity Index	3.3%
Value added return	6.0%

* gross of fee returns

The 23 reporting public pension systems earned an average annual return of 9.3% over the 10 years ending June 30, 2011, well in excess of the 3.3% annual return for publicly traded stocks (Russell 3000 Index). The ten year returns are particularly instructive because short term calculation issues such as valuation go away for the most part over this extended period. And this particular 10 year period would seem to be a fair one to evaluate private equity because it includes five years of strong economic growth and leveraged financing, followed by almost five years of weak growth and deleveraging.

The success of private equity returns relative to public stocks differs from the comparison for real estate where REITS have outperformed private real estate.

Most public pension systems benchmark a return for private equity equal to the public equity return, measured by a broad index like the Russell 3000, plus 3% to 5%. Exhibit 10 shows that the majority of private equity portfolios were able to exceed these benchmarks over the last 10 years.

Hedge Funds

Hedge funds are the newest but fastest growing alternative asset class among state pension systems. Unlike private equity and real estate, the performance record for hedge funds within public pension systems is relatively short. Exhibit 11 provides hedge fund returns reported by state pension systems. Because the time period for hedge fund investing is short for most systems, we show multiple time periods rather than just the 10 year return. The states are ranked by their return over five years.

Exhibit 11: Hedge Fund Performance – One, Three, Five, and Ten Year Returns
Ending June 30, 2011

	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>
New Jersey PERS	11.3%	2.7%	4.3%	
MPERS (MoDOT & Patrol ERS)	9.8%	2.5%	4.2%	
MOSERS	7.8%	2.2%	4.0%	
Alaska Permanent Fund*	8.0%	1.7%	3.8%	
Texas TRS	5.9%	0.5%	2.9%	4.5%
Mass PRIT/PRIM	7.5%	-0.5%	2.7%	
Alaska TRS	6.0%	-0.4%	2.0%	
Alaska PERS	6.0%	-0.4%	2.0%	
South Dakota RS	7.8%	-3.4%	1.9%	
TCDRS	9.4%	2.0%	2.0%	
CalSTRS	13.6%			
Illinois Teachers	12.4%	2.0%		
Mississippi PERS	26.8%			
Missouri Public Education ERS	18.2%	5.4%		
Missouri Public School RS	18.8%	6.6%		
New Mexico ERB	6.2%	-0.9%		
New Mexico PERA	9.8%	2.2%		
Ohio School Employees RS*	11.4%	5.3%		
Pennsylvania Public Schools ERS	13.2%			
South Carolina RS	11.6%	2.0%		
West Virginia Inv Mgm't Board	7.8%	3.3%		
Average	10.9%	1.8%	3.0%	4.5%
HFRI Fund of Funds Index	6.7%	-1.8%	1.5%	3.9%
HFRI Fund Weighted Index	11.5%	3.1%	4.8%	6.7%
NACUBO**	9.4%	1.9%	4.6%	

* Gross of Fee

** Linked average annual returns

There are significant differences in hedge fund returns among the pension systems shown in Exhibit 11, similar to private equity and real estate. This variation among plans points to the importance of fund selection and the impact of fund-of-funds which are more heavily utilized in this alternative asset class.

The HFRI Fund-of-Funds Index return and the HFRI Fund Weighted Index return (average of direct hedge fund investments) are shown at the bottom of Exhibit 11 to gauge relative performance. The average return for all pension systems investing in hedge funds outperformed the HFRI Fund-of-Funds Index but trailed the HFRI Fund Weighted Index. This result is expected because over one-half of hedge fund investments by state plans were through fund-of-funds during the periods shown.

Finally, the average return for endowments is reported in the last row of Exhibit 11, as reported by NACUBO (National Association of College and University Business Officers). Hedge fund performance among endowments is closer to the HFRI Fund Weighted Index return. Very few endowments invest in hedge fund-of-funds and instead invest in hedge funds directly, which is the primary explanation for their higher returns.

Top Performing State Funds

It is instructive to look at the investment strategies implemented by state funds earning the highest reported returns over the 10 years ending June 30, 2011. Exhibit 12 lists the top 10 reported returns from the entire group of 69 state funds.

Exhibit 12: Highest Returning State Funds for 10 Years Ending June 30, 2011

	10 Year Annualized Return
1 MOSERS	7.1%
2 South Dakota RS	7.0%
3 Oklahoma Teachers' RS	6.9%
4 Texas CDRS	6.9%
5 Delaware PERS	6.7%
6 Louisiana State Employees' RS (LASERS)	6.7%
7 Iowa Fire & Police	6.7%
8 Washington State Inv Board	6.7%
9 Massachusetts PRIM	6.5%
10 Oregon PERS	6.5%

Above-average allocations to alternatives played a key role in all but one of these funds achieving strong 10-year returns. Oklahoma Teachers was the only fund we could find where selection of traditional managers was the primary contributor to a comparatively strong 10 year return. Many of the funds also earned strong returns from high allocations to distressed, high yield, or emerging markets within traditional asset classes. A couple of state funds benefited from “strategic” asset allocation managers but this was not their principal reason for a strong outcome. The best performing state fund used alternatives and leverage to put it on top. Looking ahead, more state funds are using or considering leverage as a way to boost returns, often as a part of a “risk parity” approach to portfolio management.

Conclusion

The lesson of the past 10 years is that alternatives as a whole can potentially contribute significant value to state pension systems, though the types and selections of alternatives also impact results. The traditional 1990s investment model that placed so much importance on manager selection within traditional stock and bond asset classes produced below average returns over the past 10 years and will likely do so going forward.

Outside of private equity and real estate, state funds are using many other types of alternatives to enhance return. Our study shows that these outside-the-box approaches have added value and will likely expand going forward.

Stephen L. Nesbitt
Cliffwater LLC
310-448-5020
snesbitt@cliffwater.com

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