**Might Proper Benchmarking Help Turn Around**

**Poor Public Pension Fund Performance?**

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**Abstract**

Public pension funds in the United States typically use performance benchmarks that comprise multiple market indexes. The practice promotes a beat-the-market mentality on the part of fund managers, because the only way to outperform is to invest actively. The funds, however, consistently *under*perform passive stock-bond benchmarks by the margin of cost, which I estimate averages 1.2% of asset value. Replacing these benchmarks with simple calculation and comparison of risk-adjusted return has several potential benefits. It would eliminate the bias toward active management. It would curb abuses in performance reporting arising from downward-biased benchmarks. And it would bring about much greater attention to the cost of managing the funds, which in turn should lead to improved performance.

**BEAT THE MARKET**

Asset management of public pension funds is geared to beating the market. To this end, the funds establish performance benchmarks that typically take the form of a combination of market indexes deemed to be compatible with the funds’ objectives. A simple such bencmark might incorporate a 50% allocation to the Russell 3000 Stock Index, a 20% allocation to the Morgan Stanley Capital International All Country World Index (MSCI ACWI) ex USA Index, and a 30% allocation to the Bloomberg US Aggregate Bond Index. In practice, the custom benchmarks typically include at least some alternative investment indexes, and the benchmarks are often quite complex in their construction and are often opaque. In practice, the goal of investing is to exceed the return of these internally-devised benchmarks. This approach creates a bias toward *active* investing on the part of the funds’ investment staffs, because that is how you outperform a benchmark made up of market indexes.

Ennis (2022) examined public fund performance benchmarking in depth. It found that *significant downward bias* exists in the returns of the benchmarks public pension funds use in reporting on their performance. A sample of 24 very large funds reported outperforming benchmarks of their own devising by an average of 0.3% per year for the 10 years ending June 30, 2020. (Approximately 80% of the funds outperformed.) Those same 24 funds *under*performed passively investable benchmarks designed to match their individual market exposures and risk characteristics by an average of 1.4% per year over the same period. In other words, the benchmarks were biased downward by 1.7% a year over a decade, giving the false impression that the funds were adding value over and above passive investment during the period.[[1]](#footnote-2) The funds have created their own Lake Wobegon in which (almost) nobody underperforms.

**PERFORMANCE**

The reality is that public pension funds have underperformed properly constructed benchmarks by a wide margin and with consistency. Alternative investments, which are purely active strategies, and particularly costly ones, have been significant contributors to the underperformance. A composite of 59 large public funds underperformed a passive stock-bond benchmark by an average of 1.21% per year for the 13 years ending June 30, 2021. The bencmark is devised by means of returns-based style analysis (Sharpe 1988, 1992). The benchmark comprises the Russell 3000 Index (52%), the Morgan Stanley Capital International All Country World Index (MSCI ACWI) ex USA Index, unhedged (13%), that same index, hedged (7%) and the Bloomberg US Aggregate Bond Index (28%). The *R*2 and standard error of the benchmark regression equation are 99.3% and 1.02%, respectively. (The margin of underperformance is significant, with a *t*-statistic of -3.4.) The composite underperformed the benchmark consistently, i.e., in 12 of the 13 years. See Exhibit 1. Only one of the individual funds making up the composite had a statistically significant positive alpha; 34 had statistically significant negative ones. The statistical analysis indicates a *systemic* problem rather than merely a string of bad luck. Applied to an aggregate asset value of $5.5 trillion[[2]](#footnote-3) for public pensions, the cost of subpar performance (averaging -1.21% per year) amounts to approximately $67 billion per year. Contrast this to the funds’ self-reporting, which has them doing a bit better than the market—*adding* value, if you will.

**Exhibit 1**

**Return in Excess of Passive Benchmark for Composite of 59 Public Funds**

**(13 years ending June 30, 2021)**

In an effort to outperform public market benchmarks, public funds have steadily increased their exposure to largely illiquid and costly alternative investments such that the average was approximately 28% of total assets in 2020.[[3]](#footnote-4) Exhibit 2 illustrates the relationship between the alpha (risk-adjusted return, or value added) earned by the 59 funds described above and their exposure to alternative investments for the 13 years ending June 30, 2021. The slope coefficient is -0.039 with a significant *t-*statistic of -3.1. The negative slope indicates that a reduction in alpha of nearly 80 basis points per year relative to marketable securities alone is associated with a 20% allocation to alts. In spite of this, the funds’ enthusiasm for alts is undiminished; their average allocation, at 28% of assets, has never been greater.

**Exhibit 2**

**Alpha vs. Exposure to Alternative Investments**

**(13 Years ended June 30, 2021)**

**COST**

Exhibit 3 contains my estimate of the typical cost of investing large public funds today and 20 years ago. The funds incurred estimated average annual costs of about 60 bps of asset value in 2001, based on then-prevailing asset allocation data. The current estimate is 120 bps. At 120 bps, the cost per dollar managed (expense ratio) is more than double what it was 20 years ago, despite the opportunity for economies of scale resulting from enormous asset growth. Most of the increase is due to growing allocations to alternative investments, which are roughly 10 times more expensive than traditional investments.[[4]](#footnote-5)

**Exhibit 3**

**Investment Expense for Public Pension Funds (2020 and 2001)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Asset Class** | **Approximate**  **Cost Rate as a Percentage of Value** | **Percentage**  **of Total**  **Assets in 2020** | **Estimated**  **2020**  **Expense**  **Ratio** | **Percentage**  **of Total**  **Assets in 2001** | **Estimated**  **2001**  **Expense**  **Ratio** |
| **Equities** | 0.35%[[5]](#footnote-6) | 46.4% | 0.16% | 57.7% | 0.20 |
| **Fixed Income** | 0.25 | 23.3 | 0.06 | 31.5 | 0.08 |
| **Cash** | 0.00 | 2.4 | — | 1.8 | — |
| **Other** | 0.00 | 0.1 | — | 0.1 | — |
| **Subtotal Traditional** |  | **72.2%** | **0.22%** | **91.1%** | **0.28%** |
| **Private Equity** | 6.00[[6]](#footnote-7) | 9.3 | 0.56 | 3.6 | 0.22 |
| **Real Estate** | 2.30[[7]](#footnote-8) | 8.8 | 0.20 | 4.4 | 0.10 |
| **Hedge Funds** | 3.00[[8]](#footnote-9) | 6.4 | 0.19 | 0.3 | 0.01 |
| **Commodities** | 0.80[[9]](#footnote-10) | 1.8 | 0.02 | 0.2 | — |
| **Misc. Alternatives** | 1.00 | 1.4 | 0.01 | 0.4 | — |
| **Subtotal Alternative** |  | **27.7** | **0.98** | **8.9** | **0.33%** |
| **Total** |  | **100.0%** | **1.20%** | **100%** | **0.61%** |

Figures may not sum to 100% due to rounding.

Source of asset allocation data: Public Plans Data, Center for Retirement Research, Boston College.

It is important to note the extent of diversification of individualpublic funds. Large funds, with an average of 182 investment managers,[[10]](#footnote-11) are placing countless active bets that cancel one another out. The 59 funds described above have a median (typical) *R*2 with market indexes of 98.4%, indicating that market-like diversification is the norm. When 98% to 99% of your return variance is explained by market indexes, you simply cannot expend 1.2% of the value of your assets each year trying to beat the market and expect to meet with success. Economic theory and evidence tell us that funds with that degree of diversification, operating in competitive markets, should expect to underperform by the margin of their cost. And public pension funds have done just that.

Thanks to the prevailing beat-the-market mentality of the public funds, they are wasting upwards of 1% of their asset value annually via costly, unproductive active management. Over the long run this increases taxpayers’ burden. The next section advances a proposal to ameliorate the problems described by establishing a benchmark that better aligns investing with stakeholder interests.

**MAXIMIZE RISK-ADJUSTED RETURN**

Trustees should modify the way they evaluate the performance of their portfolio. Specifically, the goal should be to maximize *risk-adjusted return* rather than return relative to a market benchmark. Exhibit 4 shows annualized return, risk (standard deviation of return) and Sharpe ratio for the 59 funds described above. SR is a simple, widely accepted measure of risk-adjusted performance in which a portfolio’s multiperiod return (in excess of the riskless rate) is divided by the standard deviation of return. SR measures return per unit of risk. Exhibit 4 provides an illustration of using SR in evaluating performance. In the analysis, standard deviations vary widely, from 8.9% to 14.3%, the latter being fully 60% greater than the former. Standard deviation is taken as an indication of investment aggressiveness, or chosen risk level, reflecting the circumstances and objectives of each fund, as well as the risk tolerance of its trustees. The funds are ranked in descending order of SR in Exhibit 4. In this example, Georgia Teachers has the greatest risk-adjusted return (SR) at 0.796, and Louisiana Police has the lowest at 0.420. This means that the former earned near twice the rate of excess return per unit of risk as the latter, a very large margin in economic terms. The median SR is 0.601. Using the proposed framework, one can identify top-quartile performers and the percentile rank of any particular fund. It is also possible to calculate what I refer to as the the *return premium*, which is the margin of return by which individual funds exceed (fall short of) the return required for SR parity with the median fund. By this means, for example, Idaho can say that it outperformed the median fund by 1.1% per year in risk-adjusted terms over the period covered.

**Exhibit 4**

**Risk-Adjusted Performance**

**13 Years Ending June 30, 2021**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Sharpe**  **Ratio** | **Annualized**  **Total**  **Return** | **Annualized**  **Standard**  **Deviation** | **Return**  **Premium** |
| Georgia Teachers | 0.796 | 8.8% | 10.4% | 2.0% |
| North Carolina | 0.729 | 6.9 | 8.9 | 1.1 |
| Iowa PERS | 0.724 | 8.3 | 10.8 | 1.3 |
| Oklahoma Fire | 0.715 | 9.0 | 11.9 | 1.4 |
| New Jersey PERS | 0.707 | 8.0 | 10.6 | 1.1 |
| Los Angeles DWP | 0.706 | 7.8 | 10.4 | 1.1 |
| Minnesota SBI | 0.701 | 9.1 | 12.2 | 1.2 |
| Idaho PERS | 0.701 | 8.0 | 10.7 | 1.1 |
| Oklahoma Teachers | 0.693 | 9.5 | 13.0 | 1.2 |
| Missouri PEERS | 0.667 | 8.1 | 11.5 | 0.8 |
| Arizona SRS | 0.657 | 8.2 | 11.7 | 0.7 |
| New Mexico Teachers | 0.655 | 7.9 | 11.3 | 0.6 |
| New Mexico Educational | 0.655 | 7.9 | 11.3 | 0.6 |
| New Hampshire RS | 0.639 | 8.1 | 12.0 | 0.5 |
| Florida | 0.635 | 8.1 | 12.0 | 0.4 |
| Ohio Teachers | 0.634 | 8.3 | 12.3 | 0.4 |
| Montana PERS | 0.626 | 7.9 | 11.8 | 0.3 |
| Los Angeles County | 0.625 | 7.3 | 10.9 | 0.3 |
| South Dakota | 0.624 | 8.2 | 12.4 | 0.3 |
| Washington State | 0.621 | 8.1 | 12.3 | 0.2 |
| San Diego City ERS | 0.620 | 7.7 | 11.7 | 0.2 |
| Hawaii ERS | 0.618 | 7.4 | 11.3 | 0.2 |
| Connecticut Teachers | 0.613 | 7.1 | 10.8 | 0.1 |
| Kentucky County | 0.610 | 7.2 | 11.0 | 0.1 |
| San Francisco | 0.609 | 8.5 | 13.1 | 0.1 |
| Illinois Universities | 0.606 | 7.5 | 11.7 | 0.1 |
| Maine | 0.606 | 7.4 | 11.4 | 0.1 |
| Oklahoma Police | 0.603 | 7.0 | 10.8 | 0.0 |
| Arkansas Teachers | 0.603 | 8.3 | 12.9 | 0.0 |
| Rhode Island (Median SR) | 0.601 | 7.1 | 11.1 | 0.0 |
| Ohio School Employees | 0.599 | 7.6 | 11.9 | 0.0 |
| Alaska PERS | 0.596 | 7.6 | 11.9 | -0.1 |
| Illinois SERS | 0.596 | 7.4 | 11.6 | -0.1 |
| Texas Teachers | 0.593 | 7.7 | 12.1 | -0.1 |
| Connecticut Employees | 0.593 | 7.1 | 11.1 | -0.1 |
| Louisiana Teachers | 0.592 | 8.9 | 14.3 | -0.1 |
| Vermont Teachers | 0.590 | 7.0 | 11.1 | -0.1 |
| University of California | 0.588 | 7.7 | 12.3 | -0.2 |
| Virginia Ret. System | 0.587 | 7.3 | 11.6 | -0.2 |
| Chicago Teachers | 0.584 | 8.0 | 12.8 | -0.2 |
| Oregon | 0.581 | 7.6 | 12.2 | -0.2 |
| Maryland State Ret | 0.577 | 7.0 | 11.2 | -0.3 |
| Arizona Pub Safety | 0.569 | 6.7 | 10.9 | -0.3 |
| California STRS | 0.565 | 7.7 | 12.9 | -0.5 |
| Sacramento County ERS | 0.562 | 7.5 | 12.4 | -0.5 |
| Phoenix ERS | 0.535 | 6.4 | 11.1 | -0.7 |
| California PERS | 0.533 | 6.9 | 12.0 | -0.8 |
| Illinois Teachers Ret Sys | 0.531 | 6.9 | 12.1 | -0.9 |
| Louisiana SERS | 0.529 | 7.7 | 13.7 | -1.0 |
| South Carolina | 0.525 | 6.6 | 11.7 | -0.9 |
| Philadelphia Municipal | 0.523 | 6.7 | 11.8 | -0.9 |
| Missouri SERS | 0.513 | 6.5 | 11.7 | -1.0 |
| Kern County | 0.513 | 6.3 | 11.4 | -1.0 |
| Indiana PERS | 0.506 | 6.0 | 10.9 | -1.0 |
| San Diego County | 0.490 | 6.3 | 11.9 | -1.3 |
| Pennsylvania Pub Sch | 0.482 | 6.3 | 12.2 | -1.4 |
| North Dakota Teachers | 0.474 | 6.9 | 13.6 | -1.7 |
| New Mexico PERA | 0.465 | 6.4 | 12.7 | -1.7 |
| Louisiana Muni. Police | 0.420 | 6.0 | 13.1 | -2.4 |
| **Median** | **0.601** | **7.6%** | **11.7%** | **0.0%** |

Exhibit 5 is a graphic depiction of the same results. The vertical distance between the risk-return line and each plot point is the return premium for a particular fund. Included in Exhibit 5 is a plot point labeled “Passive Alternative.” Passive Alternative is the benchmark described above, with the same market exposures and risk characteristics as an equal-weighted composite of all 59 funds.

**Exhibit 5**

**Risk-Adjusted Performance**

**13 Years Ending June 30, 2021**

When evaluating performance via risk-adjusted return, the incentive to excel—to *compete*—remains. But the investment management emphasis shifts from trying to beat the market (the loser’s game) to performing better than peers in terms of risk-adjusted return. In summary, the proposed framework:

* Does away with self-selected, opaque benchmarks, which tend to produce misleading readings of fund performance.
* Eliminates the active-management bias by removing market indexes from the measurement process.
* Reflects each fund’s chosen level of investment risk, based on the circumstances and objectives of the fund as well as the risk tolerance of trustees. At the same time, the approach facilitates inter-fund comparisons using a common denominator, namely, fund-specific risk.

When superior risk-adjusted return becomes the goal, the investment managers of these uber-diversified portfolios will turn their attention to controlling cost to a much greater extent. Not lost on them will be the fact that the Passive Alternative in Figure 5 consistently outperforms all but a few of the competitors. It will become apparent that way to move to the top of the rankings is by lowering cost.

**SUMMARY**

Public pension funds in the United States typically use performance benchmarks that comprise multiple market indexes. The practice promotes a beat-the-market mentality on the part of fund managers, because the only way to outperform is to invest actively. The funds, however, consistently *under*perform passive stock-bond benchmarks by the margin of cost, which I estimate averages 1.2% of asset value annually. Replacing these benchmarks with simple calculation and comparison of risk-adjusted return has several potential benefits. It would eliminate the bias toward active management. It would curb abuses in performance reporting arising from downward-biased benchmarks. And it would bring about much greater attention to the cost of managing the funds, which in turn should lead to improved performance.

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[http://dx.doi.org/10.2139/ssrn.3883370](https://dx.doi.org/10.2139/ssrn.3883370)

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1. Public fund portfolios often exhibit close year-to-year tracking with their custom benchmarks. This results in part from how these benchmarks are revised over time. Sometimes revisions are motivated by a change in asset allocation, which may warrant adjusting the benchmark. Often, though, the revisions are more a matter of periodically revising (tweaking) the benchmark to more closely match the execution of the investment program. No doubt the benchmarkers see such tweaking as a way of legitimizing the benchmark, so that it better aligns with the actual market, asset class, and factor exposures of the fund. It accomplishes that alignment, to be sure. But it also reduces the value of the benchmark as a performance gauge, because the more a benchmark is tailored to fit the process being measured, the less information it can provide. At some point, it ceases to be a measuring stick altogether and becomes merely a shadow. We talk about “hugging the benchmark” in portfolio management. Here is a different twist on that theme, with the benchmarks hugging the portfolio. [↑](#footnote-ref-2)
2. See FRED: State and Local Government Employee Defined Benefit Retirement Funds; Total Funded Assets, Level: https://fred.stlouisfed.org/series/BOGZ1FL222000075A (Q3 2021). [↑](#footnote-ref-3)
3. See Public Plans Data, Center for Retirement Research, Boston College. [↑](#footnote-ref-4)
4. It is noteworthy that the asset-weighted equity mutual fund expense ratio *declined* from 104 bps in 1996 to 50 bps in 2020, (Investment Company Institute, 2021), an indication that the disappointing performance of active management has not been lost on the investing public in managing their own assets. [↑](#footnote-ref-5)
5. Callan (2019) is the source for fixed income and equities. The estimate for fixed income reflects the fact the endowments’ investments there are a combination of cash (at no cost) plus investment-grade and high-yield-type investments, the latter of which can cost up to 3% of asset value annually. [↑](#footnote-ref-6)
6. Phalippou and Gottschalg (2009). [↑](#footnote-ref-7)
7. Bollinger and Pagliari (2019). The figure indicated is a blend of rates for core equity, value-add and opportunistic investments. [↑](#footnote-ref-8)
8. Ben-David et al. (2020), French (2008), Ibbotson et al. (2010). The 3% figure is somewhat lower than the average reported in the studies. [↑](#footnote-ref-9)
9. Morningstar: https://www.morningstar.com/commodity-funds [↑](#footnote-ref-10)
10. See Aubry and Wandrei (2020). [↑](#footnote-ref-11)