

# **Do Public Funds Underperform Corporate Pension Funds?**

Keith Ambachtsheer  
President  
K.P.A. ADVISORY SERVICES LTD.

Sandra Halim  
Partner  
COST EFFECTIVENESS MEASUREMENT INC.

Tom Scheibelhut  
Managing Director  
COST EFFECTIVENESS MEASUREMENT INC.

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## **Do Public Pension Funds Underperform Corporate Pension Funds?**

### **STUDY SUMMARY AND CONCLUSIONS**

Cost Effectiveness Measurement Inc. (CEM) is the global provider of standardized benchmarking information on the organizational performance of pension funds. The US component of its database contains extensive, continuous 4 year data histories of 51 corporate (\$352 billion) and 34 public (\$632 billion) pension funds. These histories include data on total fund and asset class returns, on asset mix policies and actual asset class weightings, and on operating costs.

In media reports on President Clinton's proposal to invest part of the Social Security surplus in stocks, a view was expressed **that public pension funds in the US perform poorly relative to corporate funds. CEM has tested this proposition and found that it is not supported by the facts as represented in the CEM database.**

Specifically, we found that the average cost effectiveness performance of the 34 US public funds in the CEM database was marginally better over the 1994-1997 period than that of the 51 US corporate funds. On average, the public and corporate funds both produced the same total fund gross returns relative to their own policy benchmarks, but

the public funds did so incurring somewhat lower implementation risk and operating costs than the corporate funds. However, the overall average cost effectiveness differential is not statistically significant, being well within the measurement error inherent in this kind of analysis.

A recent study in the Financial Analysts Journal confirms that the organizational performance of pension funds is not driven by type of sponsorship (e.g., corporate versus public sector). Instead, it is driven by three other fund attributes: fund size, proportion of assets passively managed, and the quality of the fund's organization design. **Large size and high degrees of passive management are positively associated with positive risk adjusted, net pension fund returns, as is good governance and good organization structure. Once these fund attributes are accounted for, the type of pension fund sponsorship offers no additional statistical power in explaining pension fund performance.**

Some of the study highlights are:

- The 51 corporate funds had marginally higher average annual gross returns over the 1994-1997 four year period than the 34 public funds. However, these average results are not comparable as corporate funds and public funds had materially different asset mix policies (i.e., target asset class weightings) over this period. The average policy mix for the corporate funds was 63% stocks, 7% private equity and real estate, and 30% bonds. The equivalent target weights for the public funds were 52% stocks, 7% private equity and real estate, and 41% bonds.
- Many factors go into the choice of a fund's asset mix policy, including the underlying pension plan's funded status (i.e. whether it is over- or underfunded), the tax deductibility of contributions, the length and inflation-sensitivity of plan liabilities, and the risk tolerance of the plan's governing fiduciaries and plan stakeholders. These factors, when taken together, can lead to different 'right' asset mix policies among different pension plans.
- It is the degree of cost effectiveness with which pension fund organizations implement their chosen asset mix policies which is comparable. Specifically, how did a fund perform versus a benchmark asset mix policy return based on the 100% passive implementation of its own chosen policy? And how much did the fund 'spend' in implementation risk and operating costs? These are the criteria which can be compared across samples of pension funds for which this data has been gathered.
- The average policy return for the 51 corporate funds was 14.6% versus an average actual return of 14.6% as well. The average policy return for the 34 public funds was 13.4% versus an average actual return of 13.4% as well. Thus remarkably, on average, both types of funds matched their policy returns over this four year period, before adjusting for implementation risk and operating costs.

- A proxy for implementation risk is ‘tracking error’, a metric which indicates the degree to which the actual fund return deviated away from its own policy return over the four year period. The average tracking error for the corporate funds was 1.8% versus 1.6% for the public funds. The implication is that public funds undertook marginally less implementation risk than corporate funds, on average.
- The 51 corporate funds had an average unit operating cost of 42 basis points (i.e., 0.42% or 0.42 cents per \$1 of assets) per annum over the four year period versus a lower 28 basis points for the 34 public funds. The implication is that public funds operated at lower unit costs than corporate funds over the last four years.

## **DO PUBLIC PENSION FUNDS UNDERPERFORM CORPORATE PENSION FUNDS?**

### **What Gets Measured Gets Managed**

The CEM benchmarking approach assumes a careful alignment between the results an organization must produce to achieve its mission, and how that organization’s performance is measured. The mission of a pension fund is to generate the highest long term net return possible, subject to keeping both liability-related policy risk, and policy implementation-related operational risks at acceptable levels. Thus the challenge is to create a database which permits the calculation of individual pension fund net returns, adjusted for chosen levels of policy risk, and implementation risk. Only such metrics (called ‘risk adjusted net value added’, or RANVA) are truly comparable across a broad spectrum of pension funds.

CEM began to collect data from which such metrics could be calculated in 1991 for defined benefit (DB) pension funds. The DB database has grown every year since then, with total participation in 1997 up to 153 US, 87 Canadian, and 6 Dutch funds with collective assets of \$1.6 trillion. Of this total, 51 US corporate funds (\$352 billion) and 34 US public funds (\$632 billion) have continuous four year data histories. This subset of funds was used in this study. Readers wishing further detail on methodology are referred to Ambachtsheer (1994) in the table of references at the end of this study.

### **Calculating Policy and Implementation RANVAs**

Table I shows how CEM calculates each fund’s total performance. There are separate step-by-step calculations for assessing the impact of asset mix policy on a fund’s performance, and for assessing the impact of how well or poorly the policy is implemented. The former calculations lead to the fund’s policy RANVA, the latter to its implementation RANVA. Readers wishing further detail on the theory and practical application of this risk framework for DB pension funds are referred to Ambachtsheer (1998) in the table of references.

Table II applies this methodology to the 85 US corporate and public pension funds for which CEM has continuous four year data histories ending in 1997. Three obvious conclusions result:

- Policy returns over the 1994-1997 period far exceeded the return required to maintain the funded ratios of DB pension plans constant at their 1994 levels (i.e. the liability returns).
- Even after applying a risk capital charge to reflect policy risk, a very sizable positive RANVA (policy) of 7.1% per annum remains.
- On the policy implementation side there was, on average, no compensation for the incremental costs and risks undertaken in implementing the chosen asset mix policies. The result is a negative RANVA (implementation) of 0.6% per annum. The implication is that the average fund did not earn sufficient excess return over the 1994-1997 period to pay for the incremental risks and costs incurred in choosing to employ active management strategies.

**Table I: The Right Performance Score Card for DB Pension Funds**

<b>Asset Mix Policy</b>	
Policy Return (1)	(1) Asset mix policy return, passively implemented.
less <u>Liability Return (2)</u>	(2) Return on a bond portfolio which would immunize (or match) pension liabilities.
equals Policy Value Added	(3) Risk penalty which reflects the funded ratio at risk due to asset mix policy and the cost of risk capital.
less <u>Risk Capital Charge (3)</u>	(4) Risk adjusted net value added or RANVA due to the asset mix policy decision
equals RANVA (Policy) (4)	
<b>Policy Implementation</b>	
Total Fund Return	(5) Total fund operating costs less an estimate of what they would be if fund is managed 100% passively.
less <u>Policy Return</u>	(6) Risk penalty which reflects the funded ratio at risk due to the chosen implementation strategy.
equals Gross Implementation Value Added	(7) Risk adjusted net value added or RANVA due to the chosen implementation strategy.
less <u>Incremental Active Management Costs(5)</u>	
equals Net Implementation Value Added	
less <u>Risk Capital Charge (6)</u>	
equals RANVA (Implementation) (7)	

**Table II: Applying the Performance Scorecard to 85 US Pension Funds 1994-1997**

<b>Asset Mix Policy</b>			
	Policy Return (1)	14.2%	(1) Average asset mix policy was 66% equity, 34% debt.
less	<u>Liability Return (2)</u>	<u>5.7%</u>	
equals	Policy Value Added	8.5%	(2) Based on a blend of CPI-linked and conventional Treasury bonds with durations reflecting the length of the pension payments.
less	<u>Risk Capital Charge (3)</u>	<u>1.4%</u>	(3) Based on an average funded ratio volatility of 6.8%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.
equals	RANVA (policy)	+7.1%	
<b>Policy Implementation</b>			
	Total Fund Return	14.1%	(4) Average total fund operating cost as a percent of assets was 36 basis points.
less	<u>Policy Return</u>	<u>14.1%</u>	
equals	Gross Implementation Value Added	0.0%	(5) Based on an average active management volatility of 1.7%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.
less	<u>Incremental Active Management Cost (4)</u>	<u>0.3%</u>	
equals	Net Implementation Value Added	-0.3%	
less	<u>Risk Capital Charge (5)</u>	<u>0.3%</u>	
equals	RANVA (Implementation)	-0.6%	

### Separate Corporate and Public Fund Results

Table II sets the stage for comparing separate performance scorecards for the 51 corporate and 34 public pension funds. Tables III and IV show the same calculations separately for each subset. A comparison of Tables III and IV suggests the following:

- Remarkably, the lower average policy return achieved by the public funds because of their lower policy exposure to equities was offset by their lower required liability return. Thus public funds and corporate funds achieved the same (very high) policy RANVA of 7.1% over the 1994-1997 period.
- Average experience was also remarkably similar on the policy implementation side, with corporate and public funds average actual returns both matching their average policy returns. Average implementation risks were also very close to each other with public funds exhibiting marginally lower risk. Average unit operating costs were 42 basis points for corporate funds and 28 basis points for public funds. This made the 1994-1997 average implementation RANVA of the public funds 0.1% less negative.

It would be wrong to attach a great deal of significance to the small 0.1% difference in the average implementation RANVAs in favor of the public funds. It is quite likely to be simply due to the inherent ‘noise’ always present in this kind of analysis. Effectively, neither the average corporate or public fund recovered its total fund operating and risk costs over the 1994-1997 period.

### Looking at Stocks Performance Only

The negative comments regarding public sector pension fund performance were made in the context of President Clinton’s proposal to invest a portion of Social Security reserves in stocks. The CEM database disaggregates its stocks data for US funds into four categories: large cap US, small cap US, developed foreign, emerging foreign. Being by far the largest, we performed further in-depth analysis on the large cap US stocks component.

The CEM database disaggregates its database further by whether a component is managed actively or passively, as well as whether it is managed externally or internally. In our analysis we decided to combine all these segments for the large cap US component, and simply average total component return across the 51 corporate funds, and across the 34 public funds. The average component returns turned out to be very close: 21.6% for corporate funds, and 21.3% for public funds. Allocated direct costs (either external fees or internal expenses) averaged 25 basis points for corporate funds and 20 basis points for public funds.

Thus the net corporate fund outperformance for large cap US stocks over the 1994-1997 period was about one fourth percent per annum. Once again, it would be wrong to attach much significance to this finding of a very small performance difference. Once again, it is well within the ‘noise’ band inherent in this kind of analysis.

**Table III: Applying the Performance Scorecard to the 51 US Corporate Funds Only**

<b>Asset Mix Policy</b>			
Policy Return (1)	14.6%	(1)	Average asset mix policy was 70% equity, 30% debt. Based on a blend of CPI-linked and conventional Treasury bonds with durations reflecting the length of the pension payments.
less <u>Liability Return (2)</u>	<u>6.2%</u>		
equals Policy Value Added	8.4%		
less <u>Risk Capital Charge (3)</u>	<u>1.3%</u>	(2)	Based on an average funded ratio volatility of 6.9%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.
equals RANVA (policy)	+7.1%	(3)	

<b>Policy Implementation</b>			
	Total Fund Return	14.6%	(4)
less	<u>Policy Return</u>	<u>14.6%</u>	
equals	Gross Implementation Value Added	0.0%	(5)
less	<u>Incremental Active Management Cost (4)</u>	<u>0.3%</u>	
equals	Net Implementation Value Added	-0.3%	
less	<u>Risk Capital Charge (5)</u>	<u>-0.3%</u>	
equals	RANVA (Implementation)	-0.6%	

Average total fund operating cost as a percent of assets was 42 basis points.  
Based on an average active management volatility of 1.8%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.

**Table IV: Applying the Performance Scorecard to the 34 US Public Funds Only**

<b>Asset Mix Policy</b>			
	Policy Return (1)	13.4%	(1)
less	<u>Liability Return (2)</u>	<u>5.0%</u>	
equals	Policy Value Added	8.4%	(2)
less	<u>Risk Capital Charge (3)</u>	<u>1.3%</u>	
equals	RANVA (policy)	+7.1%	
			(3)
<b>Policy Implementation</b>			
	Total Fund Return	13.4%	(4)
less	<u>Policy Return</u>	<u>13.4%</u>	
equals	Gross Implementation Value Added	0.0%	(5)
less	<u>Incremental Active Management Cost (4)</u>	<u>0.2%</u>	
equals	Net Implementation Value Added	-0.2%	
less	<u>Risk Capital Charge (5)</u>	<u>0.3%</u>	
equals	RANVA (Implementation)	-0.5%	

Average asset mix policy was 59% equity, 41% debt.  
Based on a blend of CPI-linked and conventional Treasury bonds with durations reflecting the length of the pension payments.  
Based on an average funded ratio volatility of 6.8%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.

Average total fund operating cost as a percent of assets was 28 basis points.  
Based on an average active management volatility of 1.6%, a VAR definition of 1 year in 20, and a 12% cost of risk capital.

**So What Does Drive Pension Fund Performance?**

If type of sponsorship (i.e. corporate versus public sector) doesn't drive pension fund performance, what does? The just-published study *Improving Pension Fund Performance* in the Financial Analysts Journal (FAJ) by Ambachtsheer, Capelle, and Scheibelhut

provides an answer: fund size, proportion of assets passively managed, and the quality of a fund's organization design. The study suggests the following reasons for these findings:

- Bigger is better in pension fund management for two reasons. First, with increased size come increased economies of scale and lower unit operating costs. Perhaps more importantly, with increased size comes the ability to support a full-time professional management team dedicated to producing positive RANVA.
- The positive relationship between RANVA and the proportion of the fund passively managed probably arises because high fund proportions subjected to passive management are good proxies for high levels of understanding by a fund's governing and managing fiduciaries that (1) financial markets are generally informationally efficient and that, (2) therefore, active management can be successfully applied only at the margin, rather than to the entire fund.
- Organization design theory strongly suggests that organizations which (a) are clear about their mission, (b) have a strong governance function, (c) have optimal layering and clear delegation within the organization, and (d) align compensation with the achievement of organization goals should achieve superior organization performance. To our knowledge, the *Financial Analysts Journal* pension fund study is the first ever to provide empirical support for this proposition.

Readers wishing to pursue this line of research further are referred to Scheibelhut (1997), Ambachtsheer and Ezra (1998), and Ambachtsheer, Capelle, Scheibelhut (1998).

## References

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