

MAKING SENSE OF **PUBLIC PENSIONS**

INTRODUCTION

As governments attempt to address today's fiscal challenges, the rising cost of public pension benefits along with the unanticipated long recession has posed a challenge to maintaining long-term financial health among public agencies. Annual required contributions to fund pension benefits for states and participating local governments grew from \$27 billion in 2000 to \$68 billion in 2009.¹ Local governments are particularly affected due to having a generally higher proportion of labor costs compared to state governments, with some cities having already been forced to reduce services as a means to stay afloat. The City of Vallejo, in its "List of Creditors Holding 20 Largest Unsecured Claims" submitted as part of its Chapter 9 bankruptcy filing in May 2008, listed its retiree health benefits and unfunded pension plan benefits as its top two claims.

This Issue Brief is intended to inform elected and appointed officials, the public, and other interested parties on public defined benefit pension plans. In this effort, the Issue Brief covers pension plan types, pension funding, contribution rates, discount rates, measures of pension fund health, and the Government Accounting Standards Board's proposed public pension accounting changes.

While this Issue Brief covers the funding-related aspects of public pension plans, it does not attempt to address the significant public policy issues which must be considered in a pension reform debate, such as the need for adequate retirement income for public employees, government's role in retirement policy, the importance of retirement benefits in overall employee compensation, current system abuses such as pension "spiking" or the other numerous policy issues now under consideration by state and local governments, stakeholders, and the public. Nevertheless, understanding public pension funding is an

essential first step in considering how to improve the current public pension system responsibly.

PENSION PLAN TYPES

Pension benefits are a type of deferred compensation that employees earn as they work and receive after they retire. A pension plan is a tax-exempt fund into which contributions are deposited and invested on the employee's behalf to fund their retirement. The two main types of pension plans are the defined contribution plan and the defined benefit plan.

DEFINED CONTRIBUTION PLAN. Under a defined contribution plan the employer is only obligated to make specified contributions based on a prescribed formula, such as a specified percentage of salary or an amount matching an employee's contribution. It is up to the employee to manage the assets in their retirement account that will be used to support them in retirement. The main appeal of this type of plan for employers is that they are only liable for their contributions – all investment risk is held by the employee. Common types of defined contribution plans include 401(k) plans and 403(b) plans.

DEFINED BENEFIT PLAN. Under a defined benefit plan the employer is obligated to pay a certain level of benefits to employees when they retire, generally based on the employee's age at retirement, length of service, and salary. Defined benefit plans typically earn higher investment returns due to economies of scale and professional management. They are also able to withstand the inherent volatility in investment returns better than an individual investor. The premise is that the higher returns and retirement security afforded to employees through defined benefit plans help employers attract and retain employees at lower salaries relative to a similar position that does not offer this type of plan.

¹ *The Widening Gap*, The Pew Center on the States, April 2011

Figure 1

	DEFINED BENEFIT PLAN (DB)	DEFINED CONTRIBUTION PLAN (DC)
DEFINITION	Provides a guaranteed lifetime retirement income based on a predetermined formula generally determined by age at retirement, years of service, and final compensation.	Provides an individual employee retirement account for each employee based on employee and/or employer contributions.
EMPLOYER CONTRIBUTIONS	Amount needed to properly fund the plan varies year to year and is determined by actuaries.	Employer contributions are fixed based on a predetermined formula.
EMPLOYEE CONTRIBUTIONS	Most government DB plans require employee contributions.	Employee contributions to most DC plans are voluntary.
INVESTMENT RETURNS	Generally higher due to economies of scale and professional management. DB plans are able to employ long-term investment strategies and better withstand economic downturns.	Generally lower due to individually managed accounts. Not able to withstand market volatility as effectively as DB plans.
INVESTMENT RISKS	Employers bear the risk of investment losses and benefits from investment gains.	Employees bear the risk of investment losses and benefits from investment gains.
RECRUITMENT TOOL	A recent survey found that 60 percent of new employees at employers with DB plans cited the retirement program as an important reason they chose to work for their current employer. ^a	The same survey showed 20 percent of new employees with only a DC plan in the retirement program said it played a role in their decision to work for their employer. ^a
RETENTION TOOL	Rewards loyalty since benefits are tied to years of service. The same survey showed 72 percent of new employees said the retirement program is an important reason they will stay with their employer. ^a	Since DC plans are fully portable they do not promote employee retention. The same survey showed 26 percent said the retirement program was an important reason to remain with their current employer. ^a
ATTRITION TOOL	When reducing and/or replacing the workforce is necessary, retirement benefits may be designed to encourage attrition.	Decreasing the workforce can only be achieved with layoffs.
ADMINISTRATIVE COSTS	Generally lower due to economies of scale.	Generally higher due to individually managed accounts, although these costs are typically passed on to the employee.

^a *Retirement Attitudes - Part III: Attraction and Retention*, Towers Watson, December 2010

Figure 1 details some of the significant differences between these two types of plans.²

OTHER TYPES OF PLANS. Other types of plans include “hybrid plans” which combine features of defined contribution and defined benefit plans, and “other post-employment benefit plans” (OPEB) in which the employer is obligated to pay “other” retirement benefits such as health or dental care.

According to the U.S. Bureau of Labor Statistics, 89 percent of workers in state and local

government had access to employer-sponsored retirement benefits in September 2007, compared to 29 percent for defined contribution plans. Almost all workers (96 percent) who had access to a defined benefit retirement plan participated in it, whereas 63 percent of workers with access to defined contribution plans participated in them.³

Because the prevailing model among states and local governments is a defined benefit plan with

² *Local Elected Official Toolkit*, CalPERS, March 2011

³ *National Compensation Survey: Employee Benefits in the State and Local Governments in the United States, September 2007*, U.S. Department of Labor, Bureau of Labor Statistics, March 2008

automatic, mandatory participation, the concepts presented in this brief address defined benefit plans unless otherwise noted.

PENSION PLAN FUNDING

Defined benefit plans are generally prefunded, or paid up, by the time employees retire through contributions. Actuaries are employed to forecast the future pension obligations and estimate the employer contributions required to fund it. The advantage of prefunding is that over time the majority of benefit costs are paid by investment returns rather than employer and employee contributions. A study conducted in 2011 on the source of revenue for state and local government pension funds found approximately 66 percent came from investment earnings, 24 percent from employer contributions, and 10 percent from employee contributions.⁴ CalPERS states that historically about 65 to 75 percent of benefits has been paid from investment earnings.⁵

The basic funding equation is:

$$\text{Contributions} + \text{Investment Returns} = \text{Benefits} + \text{Expenses}$$

Contributions (both employer and employee) are put into a trust fund that is dedicated to paying benefits. These contributions are invested by the plan administrator or fund managers in a portfolio of investments that earn returns. On the other side of the equation, the plan pays out benefits and plan expenses from the fund. As shown above, over time, an increase in benefits must be met with a corresponding increase in contributions, investment returns, or both.

PRESENT VALUE OF FUTURE BENEFITS

Actuaries use mathematics, statistics, and financial theory in their determination of the total pension liability, factoring in the demographics of pension plan members (age at retirement, life expectancy, etc.) and economic factors that may affect the value of benefits or plan assets (salary increases, investment return rate, inflation rate, etc.). The total pension liability used to calculate contribution rates is discounted to its present value or, in other words, measured in today's dollars. This is called the present value of future benefits (PVB).

Present value relates to the time value of money. The concept of the time value of money states that \$100 received a year from now is not worth as much as \$100 received today because of the opportunity to invest the \$100 received today and earn one year's worth of returns on that investment. This concept is applied in the valuation of the PVB.

$$\sum_{t=1}^n \frac{\text{Projected Liability in year } t}{(1 + \text{Discount Rate})^t} = \text{PVB}$$

As a simple example, if projected future benefit payments are \$100/year for the next two years with an 8 percent discount rate, the PVB is equal to:

$$\frac{100}{(1.08)} + \frac{100}{(1.08)^2} = 178.33$$

The PVB can be broken down into two components – the amount needed to fund all benefits earned for past service, called the accrued liability, and the amount needed to fund benefits expected to be earned in the future for current employees. If the pension fund has assets equal to the PVB, no additional contributions

⁴ 2011 NCPERS Public Fund Study, National Conference on Public Employee Retirement Systems and Cobalt Community Research, June 2011

⁵ Local Elected Official Toolkit

are required to fund benefits for current and retired employees assuming actuarial assumptions hold true.

ANNUAL REQUIRED CONTRIBUTION

The annual required contribution (ARC), which is determined by actuarial methods and funding policies, is essentially the annual employer contribution (taking into account current plan assets) needed to fund the PVB over a span of up to 30 years, assuming actuarial assumptions hold true. The ARC is broadly composed of two components – the annual premium and an amortized payment.

The annual premium, referred to as the normal cost, is the cost of funding benefits earned by active employees over the upcoming fiscal year. The amortized payment is the portion of the ARC used to amortize the unfunded liability, which is the accrued liability not covered by plan assets. Different portions of the unfunded liability are amortized over different lengths of time depending on the “cause” of the unfunded liability. These causes generally consist of plan amendments, changes in actuarial assumptions or methods and differences between the actuarial assumptions and what actually occurred. The unfunded liability is amortized over a number of years to minimize short-term fluctuations in the ARC. Pension boards determine the amortization policies to be used for the various causes. Amortizing this payment over longer periods reduces volatility in the ARC, while amortizing over shorter periods increases volatility in the ARC.

Volatility of the ARC is also reduced through risk-sharing pools offered by some pension funds. By combining smaller plans, the law of large numbers can be applied to better predict demographic differences. Prior to pooling, small one or two member plans ran the risk of their ARC skyrocketing due to an unforeseen event such as a disability or death. Currently CalPERS

administers 451 non-pooled plans and about 1,800 pooled plans.

Many liken the process actuaries take to determine the ARC to those that an insurance company might use to calculate a premium for an insurance policy. The various estimates of assets and liabilities and the amortization of the unfunded liability are simply tools to determine what the premium rate should be. Actuaries generally set the ARC as a level percentage of payroll to help employers budget for the future and to maintain equity across generations of taxpayers by funding the employees’ benefits when they are earned.

FUTURE PENSION CONTRIBUTIONS

The best way to determine where future employer contributions are headed is to look at recent actual investment returns compared to the actuarially assumed investment return. As explained above, this difference is amortized into the ARC. Thus, if a pension fund has recently experienced lower returns relative to the assumed investment return there will be an increase in the ARC in future years, with larger differences leading to a larger increase in the ARC. As with investment returns, differences between actual and assumed demographic occurrences, such as unexpected salary increases, retirements, disabilities and deaths, are also amortized into the ARC. At CalPERS, these occurrences affect the ARC two years into the future for public agency plans and one year in the future for State and school plans.

MANAGING PENSION COSTS

Most experts agree that making the full ARC payment every year is the key to managing long-term pension costs. If actuarial assumptions prove to be reasonably correct, each year employers fail to make the full ARC payment, a larger and growing ARC is created in future years to make up for past underfunding. New Jersey had a fully funded (e.g. no unfunded liabilities) plan in 2002 but failed to make more than 60 percent

of its ARC payments each subsequent year. As a result, its unfunded liability grew to \$46 billion.⁶ The subsequent downgrade of its general obligation bonds is a prime example of pension funding mismanagement leading to the deterioration of a government's credit rating.

Required contribution rates are generally set by public pension boards (one such exception being CalSTRS, whose rate is set by the Legislature), so outside of properly managing pension funding through full ARC payments, employers looking to reduce their annual pension costs are left with two options – to increase their plan's assets through higher contributions or decrease liabilities by reducing benefits. Higher employee contributions, for example, would increase plan assets and reduce the share of the ARC that an employer must contribute by an equal amount. Optional employer contributions above the ARC would increase plan assets and take advantage of the pension fund's professional asset management, resulting in relatively lower ARC payments in the future.

California, as in many other states, authorizes certain groups of state employees to negotiate their pension benefits, with the Legislature setting the scope of bargaining rights and deciding whether to ultimately accept or reject any negotiated outcome between the Governor and employee unions. Local governments, special districts, and authorities with their own pension fund are also subject to negotiation, although they retain discretion to establish their pension benefits. Agencies that have their pension plan administered by CalPERS negotiate the level of employee contributions and the benefit structure. With very limited exception, reducing benefits of current employees is prohibited by numerous published legal decisions in California. These decisions, issued over the past half century, have established public employee retirement benefits as contractual obligations entitled to Constitutional pro-

tections. Reducing benefits for future employees, such as a change in the benefit formula or a reduction of cost-of-living adjustments, will produce relative cost savings in the future but will not affect current costs.

THE DISCOUNT RATE

The discount rate is the assumed investment rate of return used to discount pension liabilities and calculate the PVB. The rate is generally set by pension boards with advice from their actuaries and investment staff. Due to the long-term nature of pension funds, the discount rate has the single biggest impact on quantifying current pension liabilities. Consider an employee who is hired at age 25 and retires at age 55. Assuming a life expectancy of 75 years, that employee started earning benefits that must be projected out 50 years.

HOW THE DISCOUNT RATE IS DETERMINED

Today the industry standard is to use the assumed investment return of the portfolio of assets the pension fund chooses to invest in as the discount rate.

For most public pension funds:

$$\text{Discount Rate} = \text{Investment Return Assumption}$$

Modern portfolio theory dictates diversification of investments to achieve optimal returns at any given level of risk. The investment return assumption factors in economic, financial, and market criteria. It may also consist of an inflation assumption, real rate of return assumption (based on the asset classes and their weights in the portfolio), an adjustment for plan expenses, and a margin of error. Public pensions operate on the assumption that the plan is a "going concern" (e.g. no threat of liquidation) which gives them

⁶ *The Widening Gap*

the ability to withstand volatility in the market and invest in riskier, less liquid assets to achieve higher long-term returns. It is important to note that the discount rate is not a short-term or yearly projection but rather a long-term compounded rate of return. The selected time period for the discount rate is based on the timing of projected cash flows of the fund to balance near and long-term obligations.

To account for the volatility of returns, a best-estimate range is calculated and expressed as a range between the 25th and 75th percentiles of the expected results as per the Actuarial Standards Board's Actuarial Standard of Practice (ASOP 27). Figure 2 is the most recent range of rates calculated by CalPERS over the selected 19-year period.⁷

The discount rate has an inverse effect on the PVB and ARC. Adopting a higher discount rate will reduce the PVB and ARC, while a lower discount rate will increase the PVB and ARC. CalPERS recently estimated a reduction in the discount rate from 7.75 percent to 7.50 percent would increase contribution rates, measured as a percentage of payroll, by 2.3 percent for 'State Miscellaneous' employees (state employees who are not involved in industrial or public safety related positions).⁷

Discount Rate	PVB	ARC
Higher	↓	↓
Lower	↑	↑

Figure 2

EXAMPLE BEST-ESTIMATE RANGE

	25% PERCENTILE	50% PERCENTILE	75% PERCENTILE
Investment Return	6.11%	7.95%	9.82%
Administrative Expenses	(0.15)	(0.15)	(0.15)
Net Investment Return	5.96%	7.80%	9.67%

THE CURRENT DEBATE

Academics and pension policy makers have argued that using an investment return assumption based on investing in risky assets should not equal the rate that plans use to discount liabilities that are guaranteed (risk-free) to the beneficiary. They argue that public pensions should use either the risk-free rate (e.g. U.S. Treasuries) to reflect the guaranteed nature of benefits or the "market approach" required for private corporate defined benefit plans. The market approach reflects the market rate currently applicable to settle the benefit obligation or the rate of return on high quality fixed income securities as of the measurement date. They also speculate that setting an unreasonably high discount rate may encourage funds to take unnecessary investment risks and/or understate pension costs. The estimated gap based on fiscal year 2009 data between pension liabilities and fund assets for all state pension funds is \$1.26 trillion using the states' own discount rates, \$1.8 trillion using assumptions similar to corporate pensions and \$2.4 trillion using a discount rate based on a 30-year Treasury bond.⁸

In regards to this debate it is critical to remember that public agencies, as noted above, are assumed to be a going concern because unlike private sector companies, public employers do not generally go out of business. Thus pension funding has a long-term funding horizon which affects the selection of the appropriate discount rate. In ad-

⁷ March 15, 2011 CalPERS Benefits and Program Administration Committee Board Meeting

⁸ *The Widening Gap*

dition, the discount rate is periodically reviewed and adjusted due to changes in outlook, asset allocation, or level of benefits. The only impact the discount rate has on budgets is its effect on the calculation of the ARC. Using a discount rate that is too conservative to calculate the ARC, such as the risk-free rate, would unduly burden current budgets and taxpayers, while using a discount that is too aggressive would unduly burden future budgets and taxpayers.

However, if a pension plan is not assumed to be a going concern, such as a plan that is winding down or terminating, using a more conservative investment strategy (and thus lower discount rate) is appropriate. In this case cash flows become more predictable and there is generally more money exiting the plan than entering. In this scenario it would make little sense for the plan to assume the timing risk of having to sell assets at potentially inopportune times to pay out benefits. Thus, governments looking to reduce their pension costs in the short-term will find terminating their current defined benefit plan problematic as this increases their ARC in the short-term. This is similarly why private corporations are required to use a lower discount rate, since they cannot be assumed to be a going concern. CalPERS recently adopted a new methodology for valuing the liabilities of terminating plans by using a lower discount rate.

Employers who cannot or do not wish to assume investment risks may also be wise to employ a more conservative approach. Plan assets and government revenues may decrease concurrently during a recession and employers who cannot or do not wish to assume this risk may consider investing in assets where cash flows more closely match the cash flows of their future liabilities, resulting in a less volatile but higher ARC.

From a historical perspective, public pensions, in general, appear to have set reasonable discount

rates. A study conducted in 2011 reported a 20-year average investment return of 8.2 percent and an average discount rate of 7.7 percent for state and local government pension funds.⁹ CalPERS generated a return of 8.6 percent from 1988 to 2010 and is currently using a 19-year projected discount rate of 7.75 percent.

REPORTED PENSION FIGURES AND MEASURING THE FINANCIAL HEALTH OF PUBLIC PENSION PLANS

The common measures and health indicators of pension funds can be found or derived from a government's Comprehensive Annual Financial Reports (CAFR). Most pension experts and academic studies cite the funded ratio and unfunded liability when attempting to quantify the financial condition of public pension plans.

The funded ratio is the ratio of a pension plan's assets to its accrued liabilities. Most pension experts indicate a stable system having a funded ratio of 80 percent or more. A study conducted in 2011 reported an average funded ratio of 76 percent for state and local government pension funds.⁹

$$\frac{\text{Value of Plan Assets}}{\text{Accrued Liability}} = \text{Funded Ratio}$$

The difference between the accrued liability and plan assets represents the unfunded liability (or surplus).

$$\text{Accrued Liability} - \text{Value of Plan Assets} = \text{Unfunded Liability (or Surplus)}$$

The value of plan assets may be measured at the market or actuarial value. The market value (also called the fair value) of plan assets is the current value of those assets in the market. The actuarial

⁹ 2011 NCPERS Public Fund Study

value of plan assets is when the gains and losses from differences between assumed and actual investment returns are amortized into plan assets. It is important to note this distinction as this will affect the calculation of the unfunded liability and funded ratio. The actuarial value of plan assets is used to calculate the ARC, but it is the market value of plan assets that reflects the current ability of the plan to pay benefits and is the proper measurement of plan assets when attempting to gauge pension fund health.

While a snapshot of a pension plan's ability to pay benefits may be gauged from the funded status, examining the trend in the funded status along with past ARC payments provides insight on sustainability. A low funded status does not necessarily imply a system which is unsustainable. For example, a pension fund with a lower, but rising funded ratio with ARC payments that have historically been made and expected to be made for the foreseeable future may be considered healthier than one with a higher but deteriorating funded ratio due to ARC payments that are consistently underfunded.

PROPOSED GASB CHANGES TO PUBLIC PENSION ACCOUNTING

It is important to note the distinction between pension accounting and pension funding. Pension accounting is how governments disclose their pension fund information in their financial reports. Pension accounting standards for governments are established by the Government Accounting Standards Board (GASB). Pension funding policies, such as contribution rates, are generally set by public pension boards. Currently there is a close connection between the methodologies used in pension accounting and how pension funds approach pension funding. However if the proposed changes by GASB are imple-

mented it is expected to affect pension accounting methods only.

GASB is currently in the process of revising the accounting standards used for public pensions with the intent to improve the transparency, comparability, and usefulness of the information provided. Two exposure drafts were released on July 8th, 2011 for public comment.¹⁰ The major changes are summarized below.

1. LISTING OF THE UNFUNDED LIABILITY ON THE BALANCE SHEET RATHER THAN IN THE NOTES TO THE FINANCIAL STATEMENTS. This will increase visibility but cause the appearance of a weaker financial condition due to the inclusion of this figure.
2. CHANGING THE DISCOUNT RATE USED TO DISCOUNT THE FUTURE BENEFIT OBLIGATIONS. Rather than using the investment return assumption as the discount rate, GASB is proposing the use of a blended rate. Under the proposal, actuaries would estimate benefit payments and plan assets each year, factoring in expected cash flows (contributions, benefit payments, investment earnings, and administrative costs). The assumed investment return would be used to discount benefit payments each year until the forecast shows assets reaching zero. From that point on, all further payments would be discounted using a tax-exempt, high-quality municipal bond index rate. The blended discount rate is the one that, applied to the benefit cash flows, yields a present value equal to the sum of the two components – the funded and unfunded benefits. Generally a municipal bond index rate has a lower rate of return than that of a well-diversified portfolio which the assumed investment return is based on. Thus the use of this blended rate to discount liabilities will

¹⁰ GASB Exposure Drafts can be found on their website at www.gasb.org/home

i. Accounting and Financial Reporting for Pensions—an amendment of GASB Statement No. 27
ii. Financial Reporting for Pension Plans—an amendment of GASB Statement No. 25

likely cause an increase in the pension liabilities reported in the financial statements.

3. **SIGNIFICANTLY TIGHTENING THE RULES FOR AMORTIZING.** The effect of differences between assumed and actual returns, assumed and actual demographic experiences, and changes in plan benefits will generally all be recognized in pension expense quicker than they are under current standards. Current standards allow plans to amortize unfunded liabilities over as much as 30 years. This proposed change will increase the volatility in reported pension expense.
4. **USE OF THE ENTRY-AGE METHOD OF ALLOCATING THE PRESENT VALUE OF PROJECTED EMPLOYEE BENEFITS.** Currently pension funds are allowed to use a number of different methods to allocate their pension liability each year. CalPERS is currently using the entry-age method.
5. **ADDITIONAL NOTE DISCLOSURES.** This includes disclosures on actuarial assumptions used and additional historical information.

There is some concern with the “sticker shock” these changes may cause, but it should be noted that the proposed standards will not change the economic reality, only how pension liabilities are presented in the financial statements. Credit ratings, for example, are not expected to be affected as the rating agencies already factor in pension liabilities when assigning ratings.

CLOSING

Each public agency has different personnel needs and budget constraints, and each pension fund has its own unique characteristics as well. As such, each pension plan should be examined individually through proper analysis of the financial reports and communication with actuaries and pension administrators in this context when determining suitability. Pension obligations are a long-term liability and pension funding decisions should be viewed in the same light. Short-term thinking, such as postponing contributions or offering higher benefits during good economic times with no effective ways to reduce benefits during bad times, is one reason some governments are struggling with pension costs today. A comprehensive understanding of public pensions and your organization’s goals and constraints, combined with proper pension fund management, is critical to achieving an appropriate and stable pension plan now and in the future.¹¹

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¹¹ CalPERS holds an annual Education Forum with various workshops and exhibits as well as opportunities for local government representatives to speak with subject matter experts and members of the CalPERS Board of Administration. More information on CalPERS Education Forum can be found on their website at www.calpers.ca.gov/.



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